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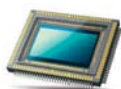
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Portgate and the new MacBook

Why Apple's new MacBook doesn't deserve the criticism

What came first the iPad or the MacBook? MacBook right? Maybe not. This new MacBook is what you get if you cross the iPad with a MacBook Air. In many ways, the old iBook brand, discontinued in 2006 when Apple made the switch to Intel processors, would have been a better name for it. I bet someone at Apple is kicking themselves for giving the iBookstore that name.

As we had expected, the MacBook comes in a choice of three colour finishes: silver, space grey and gold, just like Apple's iPhones and iPads do. This is a range of Macs for iPad and iPhone fans as much as it is a range of Macs for those who love gorgeous design.

Of course, the new MacBooks have their haters. Top of the complaints list is the fact that the MacBook only has one port. You know what else only has one port? The iPad (and the iPhone). Not that everyone is satisfied with the one port on the iPad – over the years there have been plenty of calls for Apple to add a USB port to the device to sit alongside the Lightning port. But does it really matter? For most people the extra port would be overkill, what could you possibly want to plug into the iPad that you can't plug in via the lightning port?

In the case of the MacBook there is slightly more weight to the argument that this Mac needs more ports. How on earth are you going to charge it at the same time as you back it up to an external hard drive? Apple must be crazy. Not necessarily. First, how many people use their iPad while it is charging? We imagine that people will use their MacBook while it is plugged in charging because that is what we do right now, but is that really a realistic scenario for the future? I'll go out on a limb here and suggest that people need to charge their laptops less. I once



had an old MacBook on my desk at work and it was always plugged in, as tends to be the case when you use a laptop as a desktop machine, and you know what, the battery died. The Mac would only work when it was plugged in. People need to stop doing that and by having only one port that has to be used for charging as well as other peripherals Apple is forcing people to adopt that way of working.

This panic about ports reminds me of when the MacBook Air launched and everyone was in shock about the fact that Apple had ditched the ethernet port, and, the horror, removed the DVD drive. How were we going to manage without an optical drive for music, movies and installing software? Seven years later and if you are still pining after the CD/DVD drive, then you need to join the rest of us in the 21st century.

And if you really need more ports there will be plenty of USB-C adaptors that will allow you to extend the number of ports available to you. So people need to stop panicking.

The lack of ports is but one of many criticisms of the MacBook, however. There are also complaints that it is

underpowered. The new MacBook comes with either a 1.1- or 1.3GHz Intel Core M processor, compared to the 1.6GHz i5 processor in the new Air. While this sounds a little weedy, it may not be the case; other laptops using the same processor have proven to be surprisingly speedy.

The new MacBook is also incredibly light at 920g. While this might not be as light as the iPad Air, which weighs 437g, it isn't bad when you consider that adding an external keyboard to Apple's tablet would boost the weight to about the same as the MacBook.

It's hard to find fault with the design, it really is gorgeous, but that's not stopped some people complaining that nobody in their right mind will pay £1,049 for a Mac that is less powerful and more expensive than the 13in MacBook Pro. The point is that not everyone needs power from their computer. If all you do is write emails and surf the web, then a MacBook Pro will be overkill. Sure you could save money and buy a MacBook Air for £749, but why not splurge and get the latest, most attractive, bit of Apple kit? That's what some people will do. For the rest of us, expect that the price of the MacBook will come down over the generations that follow, just as it did with the MacBook Air.

When the Air first launched in 2008 it cost £1,199, and everyone said it was too expensive. But just a few years later the Air became Apple's most popular Mac. Expect more of the same from the MacBook, but this time, everything Apple will be applying everything it has learned from the iPad and iPhone to the MacBook to ensure that it can continue to be relevant in an age where most of our interaction with technology is via our iPhones rather than a computer – except, of course, the iPhone, iPad, Mac, and even the Apple Watch, are computers.

Apple Watch to ship on 24 April with all-day battery

Apple Watch gets release date and price during Apple's Spring Forward event

BY MACWORLD STAFF

Apple hosted a special event in San Francisco on 9 March to show off some of its new creations, with executives including CEO Tim Cook taking to the stage to do the honours. The event, which came with the tagline 'Spring Forward', was streamed to millions of eager watchers live on the company's website. The centrepiece of the event was, of course, the Apple Watch, and Cook revealed more about the new device.

One of the announcements that had caused most discussion and debate online ahead of the event was its battery life. "We think the Apple Watch will be integral to your life," enthused Cook, "and so it will have an all-day battery life. A typical day equals 18 hours."

But the news we at *Macworld* were all really waiting for was the Apple Watch's release date and price in the UK. Cook said that, after a long wait, we'd finally be able to pre-order the Apple Watch from 10 April ahead of its 24 April release.

The most anticipated part of the day's event were the revelations about pricing for the three "collections," as Cook dubbed them: Apple Watch Sport, Apple Watch and Apple Watch Edition. These will be available in two sizes: 38mm and 42mm.

The entry-level Apple Watch Sport, which has an aluminium case and a selection of several colourful plastic bands, will cost from £299. Meanwhile, prices for the Apple Watch, with a stainless steel case and a selection of more upmarket bands, start at £479 and climb to £949.

Finally, the Apple Watch Edition, sporting an 18-carat gold case – will begin at £8,000, reaching all the way up

to a whopping £13,500 for some design and strap combinations.

Remarkably, the opening price of the Apple Watch is the company's lowest-ever for a new product, pointed out Jan Dawson, chief analyst with Jackdaw Research. And although £8,000 (\$10,000) may have shocked some, it was actually only \$5 more than the opening price of the 1983 Lisa computer, a Steve Jobs backed precursor to the original Macintosh.

In fact, the Apple Watch Edition's beginning price was significantly less than the Lisa, which at \$9,995 in 1983 equals \$23,800 in 2015 dollars.

"Almost all of the action is going to be between £299 and £949," explained Dawson. "99 percent of the units will be there."

Following the event, Cook spoke to *Fast Company* to talk more about the Apple Watch, telling the publication that it will be "the first modern smartwatch – the first one that matters."

He said that he hasn't put any sales expectations on the Watch because the need for an iPhone 5, 5c, iPhone 5s, 6 or 6 Plus to work "creates a ceiling."

But the watch will be an important step forward for the industry, just as the iPod, iPhone, and iPad were, because it will create a new computing experience, he suggested.

"The inputs that work for a phone, a tablet or a Mac don't work as well on a smaller screen," Cook said. "Most of the companies who have done smartwatches haven't thought that through, so they're still using pinch-to-zoom and other gestures that we created for the iPhone."

That's why Apple developed new ways of interacting with the Apple Watch,



such as the Digital Crown and Force Touch (a harder press on the watch screen that bring up an expanded set of options in various apps).

"People didn't realise they had to have an iPod, and they really didn't realise they had to have the iPhone. And the iPad was totally panned," Cook said.

"Only later did people realise the usefulness of the iPod, iPhone and iPad. Apple Watch could be in the same boat."

Find out more about the Apple Watch in our complete guide on page 12.

Apple demotes Air with new 12in Retina MacBook

The new MacBook is fanless, and is Apple's thinnest, lightest computer

BY GREGG KEIZER

The Apple Watch wasn't the only product discussed during Apple's 9 March event. The company also unveiled an all-new Retina MacBook, which is its thinnest and lightest Mac yet and boasts a 12in Retina display.

"Can you even see it? I can't even feel it," trumpeted CEO Tim Cook when he held up the new laptop during the introductory event in San Francisco.

It was the first time since April 2014 that Apple has refreshed its lightweight notebook line, and followed months of speculation the company was working on a 12in addition or replacement for the MacBook Air. However, instead of sticking with the 'Air' moniker for the new laptop, Apple cleaned off an old favourite.

"This is the lightest Mac we have ever made," said Phil Schiller, Apple's head of marketing. The new laptop is 24 percent thinner than the MacBook Air and is just 13.1mm at its thickest edge.

The new name caught the eye of some analysts. "This wasn't the MacBook Air, but instead leaped past the Air," enthused Jan Dawson, chief analyst at Jackdaw Research. "Apple kept [the MacBook Air] around, just as they do older iPhones, but the MacBook is now in the same position as the newest iPhone. That makes me wonder if the Air will go away over time."

Carolina Milanesi, chief of research at and head of US business for Kantar WorldPanel Comtech, also predicted a contraction of Apple's line-up. "All [laptops] need to be more mobile, so something like the Air doesn't need to be branched out anymore," she said of the differentiation the company's made for the line since its introduction more than eight years ago.

Schiller also stepped through a host of changes – supporting Cook's contention that the MacBook was the



result of Apple's goal to "reinvent the notebook" – including a redesigned keyboard and trackpad, a smaller logic board, and a fanless design.

Apple will begin selling the new MacBook from 10 April, the same day it begins taking pre-orders for the Apple Watch. Prices begin at £1,099 for the entry-level model. For further details, see our complete guide on page 28.

Apple also made minor tweaks to its MacBook Air and Pro notebooks, bumping up the processors in all models and shifting to faster flash storage memory. The MacBook Pro also received the same new trackpad featured in the MacBook. Their prices did not change, and are available to buy now.

Apple announces ResearchKit

ResearchKit helps iPhone users participate in medical research

BY FRED O'CONNOR

Apple's 9 March event also included the announcement of its new ResearchKit. The company believes it will help solve some of the biggest challenges facing medical researchers, such as recruiting people for studies and collecting health data more frequently.

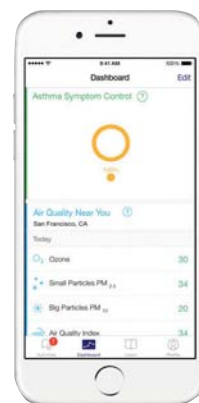
It will allow developers to create apps for medical research studies and turn a smartphone into a diagnostic tool. ResearchKit will be released as open source framework in April, but the first

five apps were made available after Apple's event. Because it's releasing ResearchKit as open source, apps can be developed for mobile platforms other than iOS, such as Android.

Apple teamed up with several hospitals in America to develop the initial apps. For example, Massachusetts General Hospital helped create an app for diabetics, and Mount Sinai Hospital in New York City worked on an app for asthma patients. The other apps involve studies dealing with cardiovascular disease, breast

cancer and Parkinson's disease.

With a person's permission, ResearchKit also accesses medical data that is collected from an iPhone, Apple Watch and apps developed with the HealthKit software framework. Apple will not see any of the health data and people decide what experiments they want to participate in and how they want to share information.



Apple Watch app released with iOS 8.2

Latest iOS update adds Apple Watch app

BY LEAH YAMSHON

As Tim Cook promised during Apple's 9 March event, Apple has released iOS 8.2, and with it comes the Apple Watch app. You'll find options for pairing your watch with your iPhone, videos about the device, and a place for future third-party apps.

Even if you don't own an Apple Watch, the app oddly lets you mess around with the pairing mechanism. It prompts you to hold up your watch to the iPhone's camera to scan it, or you can manually sync it by entering your Apple Watch's name.

Besides the Watch app, iOS 8.2 ushers in major improvements to Apple's Health app, both visually and behind the scenes. Now when you launch the app, you'll find a privacy setting that lets you turn off step tracking, including distance, steps taken and flights of stairs climbed, along with

the ability to pick your preferred unit of measurement for distance, temperature, height, weight and blood glucose. It also fixes some issues with data logging, including an issue where some graphs showed no data values, and added stability when dealing with large amounts of data over time.

Stability enhancements were made to the Mail and Music apps, as well as the Flyover feature in Apple's Maps app. iOS 8.2 also improves VoiceOver's reliability and improves connectivity with Made for iPhone hearing aids.

Finally, there are also a bunch of bug fixes involving Maps, Messages, iTunes, Music, Siri Eyes Free, Calendar, Bluetooth calling, Exchange and more.

The update is available to install now, by going to *General* → *Settings* → *Software Update* on your iOS device



to install the update wirelessly, or connect your device to your Mac to update via iTunes.

The Watch app comes with iOS 8.2 and is compatible with the iPhone 5 and newer (just like the Apple Watch itself). Once it's on your iPhone you won't be able to delete it, though.

Public beta program extended to iOS

In addition to testing OS X Yosemite updates, non-developers can now try iOS updates before they're released

BY SUSIE OCHS

With the release of iOS 8.2 came the news that Apple has officially extended its public beta program to iOS.

Once you sign up at the Apple Seed website (tinyurl.com/ojrc27n), you can get immediate access to the OS X Yosemite Public Beta program. The current seed at time of writing is OS X 10.10.3, which gives you early access to Photos, for example.

You may also see a link to join the iOS beta (the program is slowly rolling out, so Apple hasn't invited everyone immediately). Those who do see a link to

join the iOS beta will be instructed to back up their device to iTunes, then visit the Apple Seed website on that iOS device and download a configuration profile. Once that's done, the beta of iOS 8.3 should appear in *Settings* → *General* → *Software Update*.

Developers have iOS 8.3 beta 3 already, so this rollout to beta customers who aren't developers signals that it'll likely be ready for the masses soon.

iOS 8.3 will include more diverse emoji, including six different skin colours to



represent different races and more diverse family units such as same sex parent and multiple children, and wireless CarPlay, among other tweaks.

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THE COMPLETE GUIDE TO THE APPLE WATCH



THE APPLE WATCH IS ABOUT TO GO ON SALE IN THE UK. HERE'S ALL YOU NEED TO KNOW ABOUT THE SMARTWATCH WITH STYLE. [By Karen Haslam](#)

It's been a long time coming but the Apple Watch will soon be here. We were treated to a look at Apple's first foray into wearable technology at Apple's iPhone 6 event last September and then again at its 'Spring Forward' event on 9 March.

Now, six months after we first saw it, we will soon be able to buy the Apple Watch – yep, that's the name, not the iWatch, although we think iWatch is what most people will call it.

Apple has now finalised all the details including the release date and the UK pricing structure for the various different models on offer. There are still a lot of

unanswered questions, however, and in this complete guide to the Apple Watch we will seek to answer as many as we can, from the specs of the Apple Watch, to the apps available for it, and the sizes and design differences, so you can determine which Apple Watch, and watchstrap, will suit you best.

If you'd like to take a closer look at the Apple Watch, check out our full on-wrist review of the smartwatch – it starts on page 67.

What is the Apple Watch?

Apple describes its first smartwatch as “an incredibly accurate timepiece, an

intimate and immediate communication device and a groundbreaking health and fitness companion”.

It's also “highly customisable”, and “brings an entirely new way to receive information at a glance and interact with the world through third-party app experiences designed specifically for the wrist”, according to the company.

In other words, the Apple Watch is a watch and a fitness monitor, but also something more than that. It offers a new way of interacting with the information we currently receive on our iPhones. It's essentially a messaging and notifications device that also tells the time.

BUYING ADVICE

When will I be able to buy/order an Apple Watch?

You will be able to order the Apple Watch from 10 April, and there will be some available to try on (but not buy) in Apple Stores from that date. The first Apple Watches will go on sale at UK Apple Stores on 24 April.

How can I pre-order one?

On 10 April the Apple Watch will be available for pre-order through the Apple Online Store.

How can I buy an Apple Watch?

Apple is preparing a reservation system for the Apple Watch. Apple's reserve and pickup system will let you choose the watch, wristband and case you want so that the right combination will be available in store for you.

If you are going to be spending up to £13,500 on an Apple Watch, you will probably want to try one on first. There will be limited stocks in Apple Stores, so it's worth checking that your local store has them.

Is there any way I can see the Apple Watch now?

If you visit an Apple Store after 10 April you will be able to see an Apple Watch.

You will also be able to try on the top-of-the-range Apple Watch Edition by appointment at Selfridges in London on the same day.

In the meantime you can read our first look review of the Apple Watch based on hands-on time with the device – turn to page 67.

Can I test an Apple Watch before buying it?

We imagine that Apple will allow people to try on Apple Watches before they purchase them, as you would when trying on a watch in a jeweller's.

If you aren't sure you want to buy the Apple Watch but would like to try one out, and you are based in the US, gadget

rental company Lumoid says it will hire out the Watch Sport for \$45 a week and the standard Watch for \$55. You won't be able to hire the Edition, though, according to news website Mashable.

How much does it cost?

Prices for the Apple Watch will start at £299 in the UK, which is exactly what we estimated based on the previously announced \$349 start price in the US.

We reached our estimate by converting at the standard dollar/pound exchange rate (\$349 equals £216), then adding 20 percent VAT plus a little more 'Apple tax'. We also looked for comparably priced products: the 64GB iPod touch costs \$299 in the US and £249 in the UK, while the Retina iPad Mini costs \$399 in the US and £319 in the UK.

Prior to the event on 9 March, the dollar price for the Watch Sport was the only one that was publicised. What people wanted to know, though, was how much the other Apple Watch models would cost, especially the gold Apple Watch Edition which people were estimating would cost around the \$10,000 mark. Well, now we know, and the prices aren't far off the estimates.

Apple Watch is available in three ranges at various prices

■ Apple Watch Sport is priced at £299 or £339 inc VAT depending on the face size chosen – 38mm or 42mm.

■ Apple Watch is available from between £479 inc VAT and £949 inc VAT.

■ Apple Watch Edition, in 18-carat gold alloys, starts at £8,000 inc VAT.

In the US those prices are as follows:

■ Apple Watch 38mm \$549 to \$1,049.

■ Apple Watch 42mm \$599 to \$1,099.

■ Apple Watch Sport \$349 to \$399.

■ Apple Watch Edition will start at a wallet-busting \$10,000.

Pricing breaks down further, depending on the size of the watch,

the materials it is made from, and the strap selected. Note that the 38mm versions of the watches cost less than the 42mm version, and that some of the watchstraps cost more than the others.

Apple Watch Sport pricing

There are 10 combinations of faces and straps for the Apple Watch Sport available, including:

■ 38mm Apple Watch Sport with silver aluminium case with white sport band – £299.

■ 42mm Apple Watch Sport with silver aluminium case with white sport band – £339.

Apple Watch pricing

The 20 available combinations of faces and strap for the Apple Watch include:

■ 38mm Apple Watch with stainless steel face and white sport band – £479.

■ 42mm Apple Watch with stainless steel face and white sport band – £519.

■ 38mm Apple Watch with stainless steel face and black classic buckle strap – £559.

■ 42mm Apple Watch with stainless steel face and black classic buckle strap – £599.

■ 38mm Apple Watch with stainless steel face and Milanese loop strap – £559.

■ 42mm Apple Watch with stainless steel face and Milanese loop strap – £599.



Entry level Apple Watch Sport with silver aluminium case and blue sport band.

- 38mm Apple Watch with stainless steel face and black modern buckle strap – £649.
- 42mm Apple Watch with stainless steel face and midnight blue modern buckle strap – £649.
- 38mm Apple Watch with space black case and stainless steel link bracelet – £899.
- 42mm Apple Watch with space black case and stainless steel link bracelet – £949.

Apple Watch Edition pricing

There are eight combinations of faces and straps available for the Apple Watch Edition. They include:

- 18-carat rose gold with white sport band, 38mm – £8,000.
- 18-carat rose gold with white sport band, 42mm – £9,500.
- 18-carat yellow gold with black sport band, 38mm – £8,000.
- 18-carat yellow gold with black sport band, 42mm – £9,500.
- 18-carat rose gold with rose grey modern buckle strap, 38mm – £13,500.
- 18-carat yellow gold with black classic buckle strap, 42mm – £12,000.
- 18-carat yellow gold with bright red modern buckle, 38mm – £13,500.
- 18-carat yellow gold with midnight blue classic buckle, 42mm – £12,000.

Is the Apple Watch too expensive?

When the first iPod launched back in 2001, it bore a price tag of £349. At the time there were a great many complaints about that price, particularly given that some of the other MP3 players around at the time cost far less. It's much the same story today, with smartwatches available for a lot less than the Apple Watch, as you can see from our round-up of the Apple Watch competition starting on page 40.

The high price of the iPod certainly didn't seem to present any great obstacle to the iPod's rise to superiority, and over the years the price did slowly come down – you can now buy a 2GB iPod shuffle for £40. It seems perfectly feasible that the same could also happen with the Apple Watch: that the higher price will be no hindrance, and that over time the price will come down.

We think that the price point of £299 for the entry-level model, which puts it somewhere between the price of the iPad mini 2 and the iPhone 5c, is a reasonable one.

Is the Apple Watch Edition too expensive?

While some people are complaining that Apple shouldn't ship a product that is out of the price range of the average person, there have also been suggestions from some that the Apple Watch isn't expensive enough!

Whatever you think about the price of the Apple Watch Edition, the person you have to blame – or praise – for its existence is Apple's design guru Jonathan Ive. It was Ive that pushed for the company to make the high-priced product to appeal to wealthy people. According to a *New Yorker* profile of February 2015, Ive had to fight hard for the Apple Watch Edition to be made, with some execs fearing it might be divisive.

We think that it doesn't matter a great deal if the Apple Watch Edition is priced too high for the average Apple customer to afford: if a celebrity is seen wearing the Apple Watch Edition, then their fans will buy the version of the Apple Watch that they can afford.

How many Apple Watches are there to choose from?

There are three collections of Apple Watch available, in two different sizes, made from different materials, and with a variety of straps available. Based on the different finishes and straps that you can purchase the Apple Watch with, there are about 38 different combinations possible. There could have been even more if all the watchstraps fitted all different sizes of Apple Watch, but some don't.

The finishes include stainless steel, silver aluminium, 18-carat yellow gold, space black stainless steel, space grey aluminium and 18-carat

gold is supposedly up to twice as hard as standard gold.

The watch face itself comes in two sizes. The bigger one is 42mm high, the other is 38mm.

The Apple Watch range is made of stainless steel, and has a chrome or a space black finish.

The Apple Watch Sport is made from an anodised aluminium which is lighter than the stainless steel. It comes in a silver or space grey finish.

The Apple Watch Edition – that's the top-of-the-line model that starts at £8,000 – is made from 18-carat gold – either rose gold or yellow gold. It's heavier than the other models. The Watch Edition comes in a fancy leather box that doubles as a charging cradle.

The glass of the Apple Watch face is different depending on which model you opt for. The Apple Watch and the Apple Watch Edition faces are covered in sapphire crystal, which is said to be harder than the Gorilla Glass used in the iPhone, while the Apple Watch Sport face is strengthened ion-x glass, which should be able to take some bashing and is lighter than the sapphire glass.

In the middle One of the 42mm Apple Watch collection with stainless steel case and Milanese loop strap.



Which should I buy?

If you're into sport, then the Apple Watch Sport is probably the obvious choice. It has an aluminium case, features Apple's more robust ion-x glass display, and ships with fluoroelastomer (a synthetic rubber) sport band. It's comfortable to wear, durable and sweatproof, and is available in black or white if neon colours aren't really your thing.

If you want the cheapest Apple Watch available, then the Apple Watch Sport is the one you'll have to settle on. If you subsequently decide that you hate the band, then you can always buy another one from Apple's selection. However, if you buy an Apple Watch Sport in the hope of pairing it with the stainless steel bracelets, it's worth noting that it will clash with the aluminium case.

If you're happy to pay a little more for style, then the Apple Watch might be for you. Prices range from £349 to £949 depending on the material the case is made from and the band you choose. The Apple Watch costs more than the Watch Sport because its case is stainless steel rather than aluminium. It also has sapphire crystal over the display, and a black accent on the digital crown. Apple's stainless steel is 80 percent harder than ordinary stainless steel. The watch can be paired with various straps, from the leather classic buckle, modern buckle and leather loop to the stainless steel Milanese loop and link bracelet. Along with the stainless steel case option, there is a space grey stainless steel case, with bands to match.

Then there's the Apple Watch Edition. We don't think many people will buy this; it's likely to be the preserve of celebrities and those with pots of money – but that is likely to be its appeal. Just as some celebrities got their iPhones gold-plated and diamond-encrusted, so they will be able to buy an 18-carat gold Apple Watch – and we don't mean gold-plated. Prices in the UK start at £8,000 and go up to £13,500 for those who choose the 38mm 18-carat rose gold with rose grey modern buckle – interestingly, this, the most expensive Apple smartwatch, is only available in the smaller size.

Which size Apple Watch should I get?

There are two sizes of Apple Watch: the 38mm face and the 42mm face. This is Apple's solution for one of the big criticisms of existing smartwatches: they look and feel humongous on women's wrists.

However, this isn't to say that it's got to be the 38mm face for women and the 42mm for men. Apart from the fact that the 38mm version is generally cheaper than the 42mm version, and therefore likely to be more popular, some men may like the smaller face, and some women may prefer the larger. It may well divide people in the same way the iPhone 6 and iPhone 6 Plus have.

The screen of the 38mm Watch actually measures 38.6mm high by 33.3mm wide and is 10.5mm thick. The screen of the 42mm Watch measures 42mm high by 35.9mm wide and is 10.5mm thick. If you want to get a clearer idea of how big the screen is, open the Apple Store app on your iPhone and you can see the actual sizes. Go to [Learn more](#) → [View pricing](#) → [Compare case sizes](#).

Alternatively, to actually see a Watch, visit an Apple Store on any day after 10 April for a demo.

How many Apple Watch straps are available?

Apple launched the Apple Watch with a choice of six different bands, these include the link bracelet, sport band, leather loop, classic buckle, modern buckle and Milanese loop.

The result of all these options should be an Apple Watch to suit all tastes. This was Apple's aim, at least. "One of the biggest challenges that we found was that we couldn't all be sitting there wearing the same thing. I don't think we want to wear the same thing," said Jony Ive in an interview at the London Design Museum about Apple's decision to make the design of the Apple Watch so customisable. "Which is why we developed this system, not a single product."

There are five colours available for the sport band: black, white, pink, blue and

Top of the shop The £13,500 38mm 18-carat yellow gold case of the Apple Watch Edition with red modern buckle strap.

lime green.

You'll find that some are heavier than others, with the black one being the lightest.

For the Apple Watch and the Apple Watch Edition there are three leather straps and two metal straps to choose from.

The leather loop features a magnetic closure and just wraps around your wrist. It comes in stone, light brown and bright blue.

The leather modern strap also has a magnetic closure and comes in pink, brown and midnight blue.

The classic buckle strap is made of black leather and closes with a stainless steel buckle.

The link bracelet band is made from stainless steel and closes with a butterfly clasp. There is a link-release button on several of the links so you can remove links to customise the fit (or get it fitted in-store). It comes in stainless steel tone or space black.

The stainless steel Milanese loop band is like chain mail. It secures with magnets, so it can easily be adjusted to fit.

Is my wrist too big or too small for the Apple Watch?

If you have a slender wrist you may be wondering whether the Apple Watch will be too big for you. Apple says most women's wrists are within the range of 140- to 175mm. The company also suggests that most men's wrists are from 165- to 195mm. The watchstraps on offer cover wrists from 125- to 210mm.



My wrist is 150mm, so I think that for all but the skinniest of wrists, the Apple Watch should be okay.

Before you make your strap choice, measure your wrist. Some bands aren't available for very small (or large) wrists. Other bands are not available for the smaller watch face, and others still are not for the bigger watch face. For example, the modern buckle strap fits only the 38mm Watch and the leather loop is only available for the 42mm Watch and wrists over 150mm.

See the table on this page for the measurements of the different straps.

Can I buy an Apple Watch and the strap I like separately?

We originally thought that when the Apple Watch went on sale it would be possible to select the watch strap of your choice to go with the watch case you wanted.

Unfortunately, it looks like Apple has opted to make the decision of which strap goes with which watch for you: that's still 38 combinations available, though.

You can, however, purchase additional watchstraps, if you fancy one for the gym and a different one for going out. The straps also come in at different prices.

■ The sport band, available in blue, pink, green, black, white and black with space grey pin, costs £39.

■ The classic buckle strap, available in black, costs £129.

■ The Milanese loop strap costs £129.

■ The leather loop strap, available in stone leather, light brown, black and bright blue, costs £129.

■ The modern buckle strap, available in brown, black, soft pink and midnight blue, costs £209.

■ The link bracelet costs £379.

STRAP	WATCH FACE	WRIST SIZE
Small/medium sport band	38mm	140- to 180mm
Medium/large sport band	38mm	150- to 200mm
Small/medium sport band	42mm	140- to 185mm
Medium/large sport band	42mm	160- to 210mm
Small modern buckle	38mm	135- to 150mm
Medium modern buckle	38mm	145- to 165mm
Medium modern buckle	38mm	160- to 180mm
Modern buckle	42mm	NOT AVAILABLE
Leather loop	38mm	NOT AVAILABLE
Leather loop	42mm	150- to 185mm
Large leather loop	42mm	180- to 210mm
Milanese loop	38mm	130- to 180mm
Milanese loop	42mm	150- to 200mm
Link bracelet	38mm	135- to 195mm
Link bracelet	42mm	140- to 205mm
Classic buckle	38mm	125- to 200mm
Classic buckle	42mm	145- to 215mm

Will I be able to switch Apple Watch straps?

You can buy additional watchstraps and it looks like it will be easy enough to switch them around. However, not every band will go with every size of watch, as you can see from the chart on the page. For example, the leather loop will only fit the 42mm watches, and not the smaller, 38mm type.

You will also find that the metal bands, being stainless steel, won't match the aluminium finish of the Sport watch.

Can I use non-Apple Watch straps?

It is feasible that Apple will allow third parties to get in on the action and offer their own Apple Watch straps.

Casetify is already offering Apple Watch owners the chance to create personalised Apple Watch straps. Casetify

specialises in custom-designed iPhone and iPad cases which you can create using your own photographs. The company is now extending its design tools to allow users to personalise their Apple Watch strap.

Casetify says that its watch straps will cost \$50 and will ship in June.

Is the Apple Watch okay for left- and right-handed use?

The Apple Watch works fine whether you are left-handed or right-handed. That's because the display rotates, just like the iPhone display does. All you have to do is flip the watch round, so the digital crown is on the left.

However, a few left-handed people have pointed out that it can be awkward to reach the digital crown if you wear the watch on your right wrist.

Gimme five The sport bands come in blue, pink, green, white and black, all with a space grey pin.



SPECS

Is there a difference in technical specs between the three Apple Watch collections?

It doesn't matter how much you spend, each Watch comes with the same 8GB of storage and the same software. The differences are largely cosmetic.

However, in its marketing material Apple indicates that the 42mm Apple Watch will offer a little more battery life than the 38mm version, probably thanks to the slightly larger battery in that model. Don't expect this to be significant, though.

What is the processor inside the Apple Watch?

The chip inside the Apple Watch is custom-designed and called the S1. The processor incorporates many subsystems that have been encapsulated in resin for extra durability.

How much storage is available on the Apple Watch?

Although each Watch comes with 8GB of storage, there are limitations to how you can use it. You can fill 2GB with music (200 songs) and 75MB with photos. So what of the remaining 6GB? It's likely that this is reserved for the operating system, application caches and other data.

There may also be some room available for apps, although currently apps are stored on the paired iPhone, and transmitted to the Watch when you use the app. It is thought that when Apple makes a native software development kit available to developers some apps will be able to store some resources on the Watch itself. Last November Apple said: "Starting later next year, developers will be able to create fully native apps for Apple Watch."

How much music can I store on the Apple Watch?

Although there is 8GB storage available on the Watch, Apple says there is only room for 2GB of music. That's about 200 songs. Those songs can be played even if you don't have your iPhone with you.

When the Apple Watch is paired with your iPhone, you will be able to listen to any tracks you've got on the iPhone (although in that case you might as well plug your headphones into your iPhone).

You decide which tracks should sync with your Apple Watch in the iPhone app which came as part of iOS 8.2.

Are there any headphones for the Apple Watch?

There is no headphone port in the Apple Watch; it works with Bluetooth headphones. There is also a built-in speaker and mic.

How many photos can I store on the Apple Watch?

Although there is 8GB storage available on the Watch, Apple says there is only room for 75MB of photos. You manage which photos appear on the Watch through iCloud Photo Library. These images will be automatically resized when they are added to the Watch. It's estimated that you should be able to store about 100 photos on the Watch.

What material is the Apple Watch made from?

The Apple Watch is made from stainless steel and the Apple Watch Sport from an anodised aluminium.

The 18-carat gold Apple Watch Edition is solid gold – not gold-plated. It's harder than standard gold, thanks to a process by which Apple is able to pack molecules in the gold even closer together (no doubt Apple has also invented a way to turn coal into gold but is keeping quiet about it).

This alchemy is patented to Apple and apparently means that Apple needs less gold than it would have had the process not been possible. It has been suggested by website Cult of Mac that if the Apple Watch Edition proves

popular it will consume one-third of the world's gold supply. We're not at all sure how they arrived at that calculation, but it does sound impressive.

How heavy is the Apple Watch?

It's probably not as light as your current watch. Rob Griffiths has calculated the weight of the various watches combined with straps, among other things. He puts the weight of the various watch cases – the most significant element in the total weight – as follows:

- The 38mm Apple Watch Sport case weighs 25g.
- The 38mm Apple Watch case weighs 40g.
- The 38mm Apple Watch Edition rose gold case weighs 54g.
- The 38mm Apple Watch Edition yellow gold case weighs 55g.
- The 42mm Apple Watch Sport case weighs 30g.
- The 42mm Apple Watch case weighs 50g.
- The 42mm Apple Watch Edition rose gold case weighs 67g.
- The 42mm Apple Watch Edition yellow gold case weighs 69g.

The watch case, though, is only part of the Apple Watch weight story. The various straps are all different weights as well – even the different-colour sport straps. Griffiths adds the weight of the straps on to the watch case weight to arrive at the following measurements (he notes that he

Meet the brain The S1 chip has been custom-designed for the Apple Watch.



had to guess the classic buckle weight, and that some sizes of bands are not included in the list).

38mm Apple Watch Sport weight, with strap

- The 38mm Apple Watch Sport with white sport band weighs 72g.
- The 38mm Apple Watch Sport with blue sport band weighs 69g.
- The 38mm Apple Watch Sport with green sport band weighs 68g.
- The 38mm Apple Watch Sport with pink sport band weighs 67g.
- The 38mm Apple Watch Sport with black sport band weighs 62g.

42mm Apple Watch Sport weight, with strap

- The 42mm Apple Watch Sport with white sport band weighs 81g.
- The 42mm Apple Watch Sport with blue sport band weighs 78g.
- The 42mm Apple Watch Sport with green sport band weighs 78g.
- The 42mm Apple Watch Sport with pink sport band weighs 76g.
- The 42mm Apple Watch Sport with black sport band weighs 70g.

The 38mm Apple Watch weight, with strap

- The 38mm Apple Watch with white sport band weighs 87g.
- The 38mm Apple Watch with black sport band weighs 77g.
- The 38mm Apple Watch with classic buckle weighs 56g.
- The 38mm Apple Watch with Milanese loop weighs 73g.
- The 38mm Apple Watch with modern buckle weighs 63g.

Keeping tabs On the back of the watch case, a ceramic cover fitted with sapphire lenses protects the sensors.

- The 38mm Apple Watch with link bracelet weighs 105g.

The 42mm Apple Watch weight, with strap

- The 42mm Apple Watch with white sport band weighs 101g.
- The 42mm Apple Watch with black sport band weighs 90g.
- The 42mm Apple Watch with classic buckle strap weighs 69g.
- The 42mm Apple Watch with Milanese loop strap weighs 91g.
- The 42mm Apple Watch with leather loop strap weighs 80g.
- The 42mm Apple Watch with link bracelet weighs 125g.

The 38mm Apple Watch Edition weight, with strap

- The 38mm 18-carat rose gold with white sport band weighs 102g.
- The 38mm 18-carat yellow gold with black sport band weighs 93g.
- The 38mm 18-carat rose gold with rose grey modern buckle strap weighs 94g.
- The 38mm 18-carat rose gold with bright red modern buckle strap weighs 96g.

The 42mm Apple Watch Edition weight, with strap

- The 42mm 18-carat rose gold with white sport band weighs 120g.



Beat this The Apple Watch Sport's ion-x crystal face is made to withstand knocks.

- The 42mm 18-carat yellow gold with black sport band weighs 111g.
- The 42mm 18-carat yellow gold with classic buckle strap weighs 88g.

How durable is the watch face?

The material used for the Apple Watch face differs depending on the watch.

The Watch Sport features an ion-x glass display, while the Watch and Watch Edition use sapphire glass. The ion-x should be able to withstand any knocks and has the added bonus of being lighter than the sapphire glass.

What sensors does it have?

The Apple Watch has a couple of different sensors, including a gyroscope and an accelerometer.

There's also a custom sensor that uses visible-light and infrared LEDs along with photodiodes on the back of the device to determine your heart rate.

The accelerometer will allow the watch to count your steps. It will extrapolate distance on its own, or rely on the GPS in the paired iPhone to trace your exact route. The step data will then be used by the Activity and Workout apps included on the Watch.

According to reports, the Apple Watch was originally intended to have more advanced health features with additional sensors, but manufacturing issues and reliability problems forced Apple to leave some sensors, including blood pressure, out of the smartwatch.

Tech website TechCrunch has speculated that a mystery port on the Apple Watch could be the key to prolonging its life, by allowing the smartwatch to connect with new devices and accessories in the future that help introduce additional features including new sensors, for example. After all, the top Apple Watch could cost up to \$10,000, so that's no small investment for a watch that could otherwise be obsolete in a year or two.

Is the Apple Watch waterproof?

The Apple Watch is water-resistant but not waterproof. So it will be fine if it gets wet on a rainy day – and Apple CEO Tim Cook has revealed that he wears his Apple Watch when he's in the shower – but you'd be well advised to avoid submerging it in water.

Apple says: "Apple Watch is splash and water-resistant but not waterproof. You can, for example, wear and use Apple Watch during exercise, in the rain, and while washing your hands, but submerging Apple Watch is not recommended. Apple Watch has a water resistance rating of IPX7 under IEC standard 60529. The leather bands are not water-resistant."

That IPX7 rating means it should survive in water up to one metre deep for up to 30 minutes, but this isn't recommended.

How long is the Apple Watch's battery life?

During its 9 March keynote event, Apple claimed that the Apple Watch battery will keep the smartwatch going for 18 hours. On Apple's website the battery life is broken down in more detail:

- All-day battery life, 18 hours: this includes some 90 time checks, 90 notifications, 45 minutes of app use, and 30 minutes working out with music playing via Bluetooth.

- Talk time, three hours: Apple paired an Apple Watch with an iPhone and managed to place a three-hour call from the Apple Watch.

- Audio playback, 6.5 hours: Apple played music on an Apple Watch via Bluetooth.

- Workout, 6.5 hours: Apple managed 6.5 hours working out (we wonder who had that job), with the heart rate monitor on during the workout.

- Watch, 48 hours: if you just check the time five times an hour, then the Apple Watch should last two days.

- Power reserve, 72 hours: if the battery gets too low, then rather than switching off the Apple Watch will go into Power Reserve mode, so that you can still see the time. This can last for 72 hours.

How power-hungry is it?

Apple has guarded against the Watch being too much of a battery hog: it is designed to get you the info you want quickly, both in how that information is presented and how easy it is to move between it. So it's unlikely that you will be staring at it, with the screen on, for huge stretches of time. It only takes a second to open a glance and see the information you are looking for.

People aren't likely to sit staring at their Apple Watch during a commute, for example. The Apple Watch will be glanced at, rather than studied (unless perhaps you want to read an email).

The Apple Watch may also have the effect of extending the battery life of your iPhone, because the latter's screen will be turned on less.

What happens when the Apple Watch runs out of battery?

When your Apple Watch starts running low it will switch to Power Reserve mode, which will give it around 72 hours of life as a watch before you plug it in again – by which we mean it will function only as a timepiece in that period.

How do you charge up the Apple Watch?

The Apple Watch doesn't charge wirelessly but you don't exactly plug it in to recharge it either. Instead, the charging cable snaps onto the back of the watch



It's a snap The magnetic charger snaps into place automatically.

thanks to magnets, and then charges via induction. It's similar to how an electric toothbrush is charged.

This inductive charging feature means that no alignment or exposed contacts are required. The magnetic charger uses MagSafe technology that allows you to hold the connector near the back of the watch, with the magnets snapping it into place automatically.

It's interesting that Apple is using MagSafe here on the Watch, but not on the new 12in MacBook the company also launched at this event.

How long does the Apple Watch take to charge?

According to Apple, charging the watch to 100 percent takes 2.5 hours, although you can get to 80 percent in 1.5 hours.

Griffin has already launched Watch Stand – a charger for your Apple Watch – so expect to see many more arriving this year.

Can you replace the battery in the Apple Watch?

This is likely to be a concern of anyone spending a lot of money on an Apple Watch. The good news, according to reports, is that it will be possible to



replace the battery – but an Apple technician will have to do it for you.

An Apple spokesperson told TechCrunch that Watch owners will be able to send devices to Apple to have the battery swapped. The service will have a cost associated with it.

What happens if the iPhone your Apple Watch is paired with runs out of battery?

With 18 hours of battery life on offer for the Watch, what of the iPhone that runs out of battery first?

If this happens any functions of the Watch that rely on the iPhone will stop working. That includes being able to take calls via your wrist, social networking apps, email, messages and the digital touch features.

But you will still be able to pay for stuff using Apple Pay, listen to the music you have stored on the Watch, use exercise-related apps (although you won't be able to evaluate any data until it syncs with your iPhone again), and health-related features like the heartbeat monitor would continue to work.

Will the iPhone battery last longer if you use it less, or will it run out quicker because it is paired with the Apple Watch via Bluetooth? We will have to test this to see what happens, and report back with our findings.

SOFTWARE

How do you use the Apple Watch?

You navigate the Apple Watch using the touchscreen and the digital crown.

You can touch and tap the screen. It's pressure-sensitive, so it can distinguish between a normal tap and a harder touch. Taps select things while a harder press accesses contextual menus – it's much like the difference between right-clicking and left-clicking with a mouse. This technology is called force touch.

You can also access various features via swipes. Swipe up on the clock face to see information (aka glances) from your calendar as well as your location and the weather, for example.

Because the size of your fingertip is likely to obscure some of what you are trying to select on the watch's face, Apple's solution is the digital crown, which allows you to navigate without touching the screen.

The digital crown is similar to the iPod's clickwheel. You turn the crown to scroll through lists, and zoom in and out of maps and photos. Press the crown to return to the home screen.

Below the digital crown is another button. Press it to access the Friends app. In the resulting screen you will see a list of your contacts. Tap the picture of a friend to send them a message, place a phone call, or contact them using the digital touch features.

How to see glances on Apple Watch

'Glances' provide Apple Watch users with quick looks at things like sports scores, stocks and weather. They present basic information from apps in easily digestible chunks. They're non-interactive and confined to a single screen.

At your side The digital crown lets you access features without fingering the screen.



Touch of genius Alerts and notifications can be felt as well as heard.

To see your glances, raise your arm to wake your watch to its clock face. You can swipe between each glance.

How do I open apps on the Apple Watch?

You can open an app by tapping on the icon bubble on the home screen. You can also open an app by tapping on its associated glance.

How to see notifications on the Apple Watch

Notifications on the Apple Watch borrow heavily from interactive notifications in iOS 8. Notifications let users take action on emails, social media mentions and other notifications without opening the app itself.

You can see notifications by swiping down the clock face from the top. Your notifications will initially appear in a 'short look' preview mode, and they'll go away if you lower your wrist. More details



and interactive options will appear if you tap on the notification or leave your wrist up.

How does the Apple Watch notify or alert you?

The Apple Watch has a feature called the taptic engine, which provides haptic feedback to users. It works with the Apple Watch's built-in speaker to enable a new set of alerts and notifications that you'll be able both to hear and feel.

When you get a message, the taptic engine 'taps' your wrist.

When getting turn-by-turn notifications, for example, you'll feel a different alert that'll let you know whether you need to turn left or right without having to look at the display.

How to use digital touch on the Apple Watch

You can use digital touch to send a special kind of message to a friend. You can draw an image with your finger, or tap on the screen, and have that tap mirrored on their wrist. You can even send your heartbeat – to do so, hold two fingers over the watch's face.

It's the closest to telepathy that we're likely to get.

Thumbnail sketch You can draw on the Watch with your finger and send the result – or even the beating of your heart – to your friends.



How do I type messages on the Apple Watch?

If you receive a text message on your Apple Watch you may be wondering how you are going to reply to it. You won't be tapping out a reply on the 38mm or 42mm screen. Instead, Apple gives you a choice of using preset answers or dictating a reply using Siri. Alternatively you can record an audio message and send that to your friend or send an emoji.

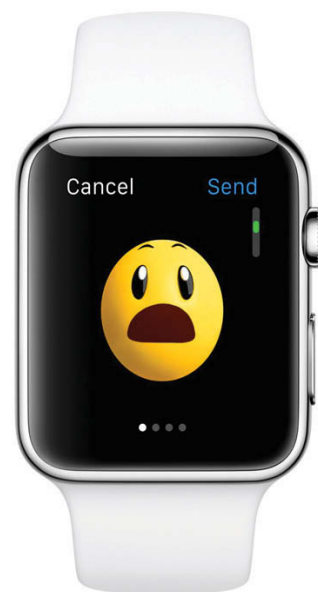
Users will be able to switch between dictation and audio replies as the preferred means of replying. Users will also be able to disable read receipts, set up default text replies, and choose not to receive alerts from certain people.

Can I get my email on the Apple Watch?

When it comes to email messages you will be able to read, flag, mark as read or unread, and delete, but you won't be able to reply unless you switch to your Mac iPhone or iPad.

How well does voice dictation work on the Apple Watch?

When you receive a text message on your Apple Watch you can dictate your reply to Siri.



We were concerned that we'd have difficulties using voice dictation with the Watch, but it worked well, even in a noisy room full of journalists.

How do you use Siri on the Apple Watch?

You can activate Siri on your Apple Watch in a few ways. Either double-tap the button located below the digital crown, press and hold down the digital crown, or say "Hey, Siri."

Can I make or take a phone call on the Apple Watch?

You can make and take calls using the Apple Watch. There is a microphone and speaker built-in, so you could talk to your wrist or use a Bluetooth headset.



APPLE WATCH AND THE IPHONE

Can you use the Apple Watch without your iPhone?

Yes, to an extent. The Apple Watch generally needs to be paired with an iPhone to offer full functionality, but it will still work even if it has been separated from the iPhone.

When, for example you arrive home or at the office, the iPhone and Watch will no longer need to communicate via Bluetooth because they will be able to communicate via the Wi-Fi network.

Bluetooth communication is possible within about 30 metres, which might sound a lot, but that will degrade if there are walls and other radio waves (say from the microwave or other devices) in the way.

Once on the Wi-Fi network you won't be tethered to your iPhone, so you could leave it charging upstairs while you access messages and other data on the Watch in your living room. You can stray as far as your local network will allow, which could be all the way to the bottom of the garden.

For now this is a benefit of the Apple Watch in comparison to Android Wear, which offers only Bluetooth connectivity. Apparently Android Wear will be getting Wi-Fi at some point.

How do you pair an Apple Watch with the iPhone?

Using the Apple Watch app on the iPhone, hold the Apple Watch up to the iPhone camera and align it with the viewfinder, then tap the 'I' icon on the Watch to view its name and tap the corresponding name in the list shown on the iPhone.

This app will have appeared on your iPhone with the iOS 8.2 update (and no, you can't delete it if you don't want it).

What features does the Apple Watch app on the iPhone offer?

If you don't have an Apple Watch the only feature offered by the Apple Watch app on the iPhone is a friendly good morning



or good afternoon, and a link to learn more about Apple Watch. But there is also the option to start pairing, once you do have an Apple Watch.

The application will manage settings for the Apple Watch apps, and the way the iPhone and Apple Watch interact.

Via the iPhone app, you will be able to set up a four-number passcode for the Apple Watch, activate fitness features (including a reminder if you have been sitting down for too long, or a summary of how much activity the watch has logged in the past four, six or eight hours), view storage capacity available as well as details about what is taking up the space, and get Bluetooth and Wi-Fi information.

You will also be able to change the layout of the Apple Watch home screen via a virtual view in the iPhone app.

Accessibility features that can be managed on the iPhone app include voiceover, the ability to zoom in on the screen, and settings to reduce motion, control audio, reduce transparency, enable bold text, and more.

Will the Apple Watch work with my iPhone?

You'll need to own an iPhone in order to use the Apple Watch. The Watch is compatible with the iPhone 5, iPhone 5s, iPhone 5c, iPhone 6 and iPhone 6 Plus.

Can the Apple Watch do anything the iPhone can't do?

The digital touch feature is Apple Watch-only. So when the Apple Watch launches

it will only be this elite of users who have the ability to communicate this way.

Can you use the Apple Watch for working out without your iPhone?

Will the Watch be a good workout partner even if you don't have your paired iPhone with you?

You won't have to take your Apple Watch with you when you go for a jog. The Watch's built-in heart rate sensor and accelerometer work on their own, and the native Workout app can track different kinds of workouts. All of that information can be synched later with your phone.

You will also have 2GB worth of music storage available on the Watch, which should be enough to play some songs during your run. You can listen to music through Bluetooth headphones.

The watch's accelerometer can also count your steps as you run, and extrapolate the distance covered. However, your route cannot be tracked if you don't have the iPhone with you as, unlike the iPhone, the Apple Watch doesn't have GPS.

The lack of GPS is likely to be a big criticism of the Apple Watch. Android Wear didn't support GPS initially, either, but now it does, and some Android smartwatches now offer GPS support. It's possible that Apple will add the capability to a future generation of the Apple Watch.

Along with GPS there are a few fitness features that won't work without your iPhone. Apps need the iPhone to tap into the data your Apple Watch collects.

APPLE PAY WITH APPLE WATCH

How do I use Apple Pay with the Apple Watch?

The Apple Watch has near-field communication (NFC) technology built-in, so you will be able to use it to pay for things – as long as Apple Pay works where you live (and we're still waiting for it in the UK).

Assuming that Apple Pay has been enabled locally, to use it on your Apple Watch you just wave the Watch near an NFC-equipped payment terminal. If you have an older iPhone (pre-iPhone 6), the Apple Watch will open up Apple Pay for you (older iPhones don't have the necessary NFC chip).

You don't need to tap the Watch, just wave it, and you will get haptic feedback on your wrist so you know it's worked.

To use Apple Pay with your Apple Watch you will need to add your credit or debit card information to the Apple Watch app on your iPhone. This information will not be stored on the Watch itself; instead, the device will store a token that will act in place of your card when you wish to pay for something.

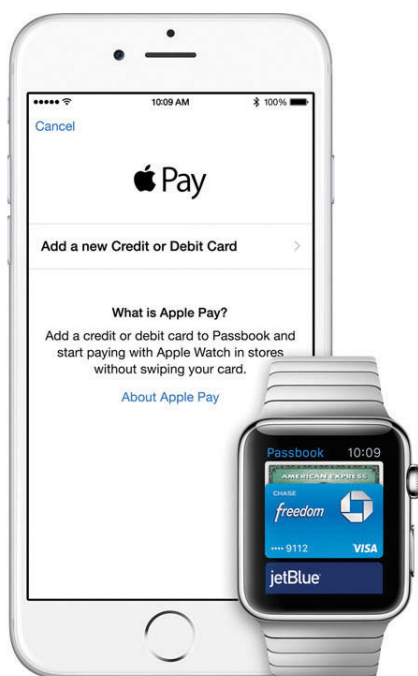
If you are worried about the security aspect of all this, you'll be pleased to know that if you take the Apple Watch off, it will lock and require a code to be entered before Apple Pay can be used again.

Does the Apple Watch have any security features?

Given that the Apple Watch can let you purchase things using Apple Pay, and even unlock the garage door, what security measures has Apple included?



If the Watch were stolen, the thief wouldn't be able to use it to pay for things via Apple Pay – as long as they don't have your passcode (or your arm still attached to the Watch, but we won't be testing that scenario)



If you are worried that someone could get their hands on your Watch and then use it to get inside your house, you needn't be. We don't know everything about how Apple will tackle privacy concerns with the Watch, but the company has a few elements in place to secure the device.

For example, when you set up Apple Pay on an Apple Watch you will have to create a passcode. This PIN must be entered before you can use Apple Pay, and you will have to re-enter the PIN each time you put the Watch back on after taking it off your wrist. There are sensors inside the Apple Watch that can tell if someone is wearing it – and you can't actually use it with Apple Pay unless it is on your wrist.

So if the Watch were stolen, the thief wouldn't be able to use it to pay for

things via Apple Pay – as long as they don't have your passcode (or your arm still attached to the Watch, but we won't be testing that scenario).

In a second level of security, Apple Pay accounts can be deactivated remotely via iCloud.

Then there is also the fact that the Apple Watch is a companion to your iPhone – and without your phone it is pretty much redundant. There's not a lot of information about you held on the Watch itself, so there is little data that a thief would be able to glean from the device if they got their hands on it.

We don't yet know if Apple will provide a Find My iPhone-style feature for the Apple Watch, should it be stolen, but we would imagine that anyone who's spent more than £8,000 on theirs will undoubtedly want to track it down.

APPS

How do I download apps for the Apple Watch?

As far as we can tell, there won't be an App Store on the Watch. You will need to download apps from a special section of the App Store on your iPhone before synching them with the Apple Watch.

What apps does Apple offer for Apple Watch?

Messages will get Apple Watch extensions that will let you read texts just by raising your arm when you get an alert. You'll also be able to respond.



When you get a **phone call**, the Watch will vibrate on your wrist and you can take a call, or reject the call, from your wrist.

Mail will alert you when you get an email, and you can read, flag or delete the message.

Your **Calendar** will be viewable on your Apple Watch and you will be notified of events as well as being able to decline and accept invites.

Apple's **Activity** app will track your movements, the exercise you take and how long you have been sitting down – and it will remind you to stand up if you haven't done so for some time. You'll also be able to see a graphical representation of your stats.

The **Workout** app will monitor your workout sessions and show time, distance, speed and calories burned.

Maps will show you a miniature map of where you are and use custom vibrations to navigate you to your destination so you won't even have to look at the watch.

Passbook will show your airline ticket and barcodes that can be scanned to allow access.

Siri will work if you speak the familiar Hey Siri command.

The **Music** app will give you 2GB space for your favourite tracks.

You can use the Apple Watch **Remote** app to control your Apple TV. There's also a remote for the camera.

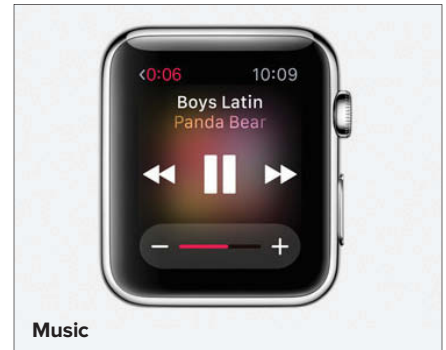
The **Weather** app will give hourly and weekly forecasts.

The **Stocks** app will offer graphs that show the performance of your stocks.

The **Photos** app offers 75MB of storage for a few of your favourite photos.

You will also get the **Alarm**, **Stop Watch** and **Timer** on the Watch – as you would expect. It looks different to the iPhone clock app, though, with a more analog appearance to the dial.

There is also a **World Clock** app available that will show the time in various time zones. You can set it up with your favourites.



Music



Photos

What third-party apps will be available for Apple Watch?

Back in November 2014 Apple introduced the WatchKit software developers' kit and other developers have been using this SDK to build their own apps. Here are a few of the ones that have been announced so far:

The **Instagram** app will let you browse your Instagram feed, like photos and leave comments.

The **Twitter** app will show notifications and allow you to respond to and interact with other Twitter users.

There is a photo editing app called **Darkroom** that will let you adjust the RGB colour curves on the Watch.

You can monitor your eBay bids using the **Ebay** app on the Watch.

The **Alarm.com** app will let you manage your home security system.

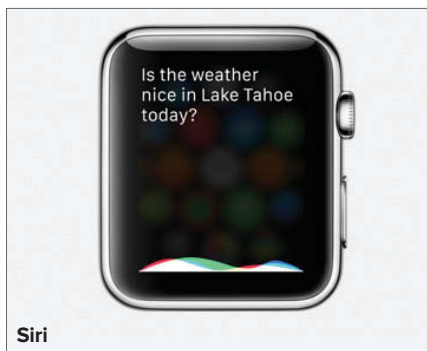
There's a **Salesforce** app.

Dark Sky is a weather app.

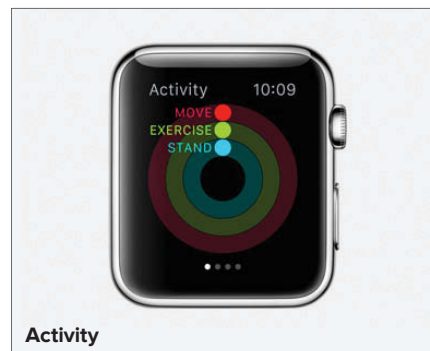
Sky Guide includes a calendar of astronomical events and notifies you of special events such as meteor showers.



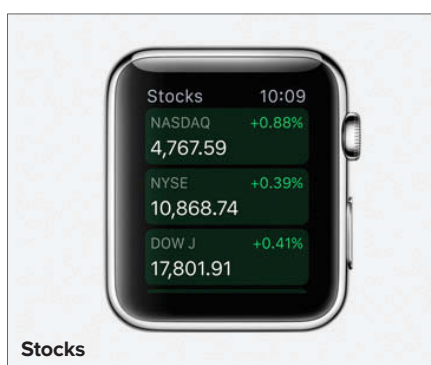
Weather



Siri



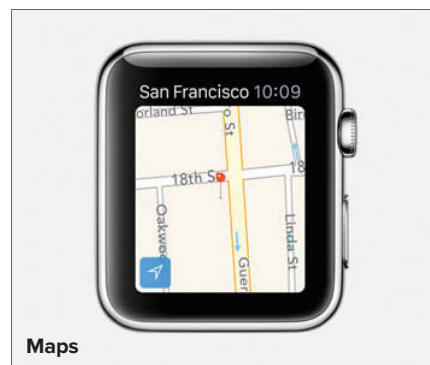
Activity



Stocks



Passbook



Maps

Evernote will let you dictate notes as well as view them and set reminders.

Shazam on the Apple Watch will tell you what song is playing.

With **Lifesum** you can track the food you eat and water you drink and get feedback so that you know how many calories you have consumed.

You can make reservations with the **OpenTable** app.

What travel apps will be available for Apple Watch?

Expedia will let you check itineraries on your Watch, as well as see departure gates and terminals for your flights, and get details for hotels.

The **Babbel** app will show you words in the language of the location you are at.

My fave The Instagram app on the Apple Watch.



The **Citymapper** app will show you routes based on your current location and provide step-by-step instructions, as well as local bus and train information. When you reach a location, the Watch will tap your wrist to let you know.

The **TripAdvisor** app will show you details of nearby restaurants and places to visit.

The **Starwood Hotels** app will let you use an Apple Watch to unlock your room.

What fitness apps will be available for Apple Watch?

Watch app partners include fit tech companies like Nike, Runtastic and Strava, and their apps will let you track your workout progress on your wrist.

The **Runtastic** app will offer glances that display real-time activity data, including speed, distance, pace and how many calories you've burned. The

app also shows information about your workouts in the form of notifications.

The **Nike+ Running** app will show the distance, pace and duration of your run.

However, you will need your iPhone for these features to work. Apps can't tap into the data your Watch collects without the iPhone, and the Watch doesn't have GPS to give you a complete picture of your actual running route.

Nor do app developers have access to the Watch's sensors yet, so they can't design new features around them.

Can third-party apps use the taptic engine and force touch?

Not yet.

How do I add notifications to the Apple Watch?

You will need an iPhone to set up notifications on your Apple Watch. When a notification arrives on your iPhone, iOS decides whether to display it on the iPhone or on the Apple Watch, according to your settings.

TELLING THE TIME



How good is the Apple Watch at telling the time?

When you raise your Apple Watch-adorned arm, the display will appear. You will also see the time in the top-right corner when you're looking at notifications. But the crucial question is, how accurate will the Apple Watch be at telling the time?

Apple says that the Apple Watch is "one of the most accurate watches ever". It continually checks the time against the definitive global time standard with the same precision found in GPS satellites – so much so that the second hand on every Apple Watch around the world will be in sync.

When daylight saving time begins, Apple says that the Watch will spring forward to the correct time.

And when you move into a different time zone the Apple Watch will adjust the time accordingly.

While the Watch doesn't have the handcrafted perpetual motion mechanism of a

Rolex, it does offer a precision and customisability that wouldn't be possible with a traditional timepiece.

Apple isn't just making an iPhone companion; it wants to stake out a claim in the annals of watchmaking history.

Incidentally, speaking of time, in all of Apple's marketing material for the Apple Watch, the time is shown as 10.09 rather than the 10.10 shown by most watch manufacturers. This may be significant, according to some theories.

Business and technology news website Business Insider reckons that Apple is choosing to display a time that is ahead of the competition to show that Apple is ahead of the curve. Meanwhile the theory from online magazine The Loop is that it's just Apple being Apple and trying to make the watch face look as symmetrical as possible – because the hour hand wouldn't be completely lined up with the 10 at 10.10.

What watch faces are there to choose from?

Rather than boast dozens of inferior faces, like Pebble Time or Android Wear, Apple has selected just nine. They are: the analogue stopwatch-style Chronograph; the bright and colourful Color; Modular, which features details like sunrise and moon phase; Utility, with details about meetings and calendar events; classic Mickey Mouse; the

elegant and minimalist Simple; Motion, which features animations of different species, butterfly,

flower, etc; Solar, showing you the position of the sun; Astronomy, which shows the earth's position in the solar system (rotate the digital crown to zoom out to see the position of the planets, sun and moon).

Once you have chosen your preferred watch face you can fine-tune the colours and add details. You can also add what Apple refers to as complications – which is a technical watchmaking term for specialised functions.

Complications on the Apple Watch include alarm, moon phase, timer, sunrise/sunset, world clock, stocks, calendar, weather and an activity tracker.

How do I change the face?

It is simple to swap a watch face. To change one, force-press on the Apple Watch screen and swipe across.



WILL THE APPLE WATCH BE A SUCCESS?



Who will buy the Apple Watch?

Every marketing agency and analyst house is trying to predict how many Watches Apple will sell.

According to the Adobe Digital Index, there will be “unexpected demand for Apple Watch”. The ADI researchers found that around 27 percent of 1,000 consumers polled who don’t currently own a smartwatch are “very likely” to buy one in next six months. Of those smartwatch wannabes, 67 percent say they will buy the Apple Watch (it should be noted that this research was carried out before pricing was confirmed).

Strategy Analytics has made a similar forecast, predicting that the Apple Watch will take half the smartwatch market. Apparently more than one in 10 of Brits polled by Conjure say they will buy the Apple Watch. The exact figure is 13.25 percent, says Conjure – the equivalent of 8.3 million people here in the UK.

Who will buy the Apple Watch Edition?

There are a lot of theories about this, with many suggesting that the high price of the Edition version of the Apple Watch will limit its appeal.

The fact is that £8,000 to £13,500 isn’t unheard of when it comes to watch prices, so there is a market for watches at this sort of price. But can the Apple Watch compete with the likes of Rolex? Possibly. If people are willing to spend around £25,000 on a Rolex, why wouldn’t some spend half that on an Apple Watch made from 18-carat rose gold?

However, there are a few good reasons why the Apple Watch might not prove such an easy sell to watch aficionados: watches with high prices usually have incredibly intricate mechanics – often hand-crafted – and are highly individual. They are also often seen as heirlooms to be passed down the generations – not something that we anticipate happening with the Apple Watch (although you might pass it on to a wife or child in the same way as iPhones and iPads are passed on). The point is that an Apple Watch won’t last for years.



However, we’re sure there will be a few celebrities spotted with pricy Apple Watches adorning their wrists. In some ways it doesn’t matter if Apple sells only a few Watch Editions: if celebrities are spotted wearing them, their fans will follow. This is how an Apple Watch can become an aspirational device – and luckily there are practically identical, cheaper alternatives available.

Another group of people identified as potential Edition customers are wealthy Chinese. The Apple Watch has already made the cover of *Vogue China*, and the number of super-wealthy in China is set to increase exponentially over the next few years.

How many Apple Watches will Apple sell?

If the iPhone was a computer in your pocket, then the Apple Watch is an iPhone on your wrist. It’s also your boarding pass for your flight to Paris, your debit card, your front door keys, your fitness monitor and health data tracker. It will be the tool by which you control the growing internet of things around you.

Give it a year and it will be doing even more things and we’ll wonder how we coped without it.

Crucially Apple’s smartwatch also requires you to have Apple’s smartphone. The Apple Watch could therefore end up helping Apple to sell even more iPhones.

Apparently Apple is set to use up 18 percent of the world’s sapphire ingot output to make the Apple Watch displays. According to the Chinese online newspaper DigiTimes, this is the equivalent of 30.8 million two-inch sapphire ingots in the Chinese supply chain. An ingot, incidentally, is just a chunk of the material ready for further processing – like the gold bars stolen in *The Italian Job*.

Based on orders received by the suppliers producing the sapphire for use in the Apple Watch, Apple has ordered enough for some 15 to 20 million units of the Apple Watch in 2015.



Complete guide to the MacBook

Ashleigh Allsopp reveals everything you need to know about Apple's new slimline laptop

Apple CEO Tim Cook took to the stage on 9 March at the company's Spring Forward Apple Watch event to unveil the latest development in its laptop line-up – the MacBook. Over the following pages, we've got everything you need to know.

Release date

First off, when will you be able to buy the new MacBook? Apple revealed that it will begin selling the new laptop from 10 April – it will be available through the Apple Online Store, Apple Retail Stores and Apple Authorised Resellers.

For a full list of prices and specs, see our table on page 30.

Design

The new MacBook is available in three colours: Silver, Space Grey and Gold. It's also Apple's thinnest laptop, measuring just 13.1mm thick, which makes it 24 percent thinner than the company's

previous slimmest MacBook, the 11in MacBook Air. It also weighs just 920g. "Can you see it," Tim Cook joked on stage when he unveiled it. "I can't even feel it!"

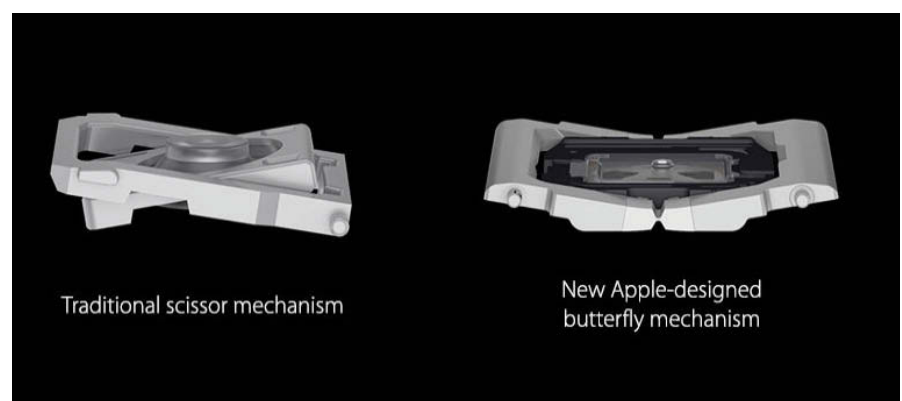
It's not the thinnest laptop in the world, though: that honour goes to Lenovo's Yoga 3 Pro, which is 12.7mm thick. It's not the lightest either. Another Lenovo, the LaVie Z HZ550, weighs 780g.

We're pleased to see that Apple has managed to reduce the size of the bezels around the edge of the display, too.

The logo on the back doesn't glow. Instead it's more like that found on the rear of the iPad.

Display

This MacBook has a stunning 12in Retina display, with a resolution of 2304x1440 pixels. That equates to 226ppi, so is in line with the 13in Retina MacBook Pro's pixel density of 227ppi. It's also the thinnest display ever found on a Mac, at just 0.88mm thin.





Force Touch trackpad

One of the headline features of this laptop is the Force Touch Trackpad. According to Apple, it can tell the difference between a tap and a click, and is pressure sensitive, so can know how hard you're pressing. The trackpad has four Force Sensors, which means you can click anywhere on the trackpad rather than having to click near the bottom as you would on a traditional trackpad.

You're not actually clicking, though, you're really pushing – the Taptic Engine tricks you into thinking that you're clicking by using haptic feedback (vibrations). It sounds like a click, it feels like a click, but it isn't a click. Numerous people who've spent time with the new trackpad have said that it messes with your head to begin with, but that's not a bad thing – it's just different.

You can change the sensitivity options to suit your preference. It'll take a bit of getting used to, but once you do it will change the way you use your laptop – the right-click will be a thing of the past.

Apple has also announced it will roll out the Force Touch functionality to third-party developers to allow all apps to take advantage of the new gestures. For now, though, it's limited to Apple's apps.

During its hands-on demo, Apple showed off how you'll be able to press harder on the fast-forward button in

QuickTime to speed it up. There's also the new Force Click, which means you can click hard on a word in a web page in Safari to open the dictionary meaning of that word, or the relevant Wikipedia page. Force Clicking on an address will launch the Maps app, too. We're excited about the possibilities that the new Force Touch Trackpad opens up, that's for sure.



Apple has said that it will roll out the Force Touch functionality to third-party developers to allow all apps to take advantage of the new gestures

Keyboard

In addition to the redesigned, high-tech trackpad, Apple has rebuilt its keyboard from the ground up. It's still full-size, but uses a butterfly mechanism (pictured below) rather than the previous scissor mechanism to improve precision and accuracy, and has allowed Apple to make it 40 percent thinner.

The size of each key is slightly bigger, and the space between each is smaller, which should help improve accuracy once you get used to the strange sensation of typing on a keyboard that almost feels like a touchscreen because the keys move so little when you press them.

Beyond that, the Escape key has been elongated and the Function keys are

narrower. The arrow keys are different, too. The new keyboard also has individually lit keys, with an LED underneath each key.

USB Type-C explained

Apple's new MacBook is the first Mac to sport the new USB Type-C port, and while it's going to take some serious

getting used to, we imagine it's going to be around for quite a while.

In case you're wondering, USB Type-A is the USB port you're used to seeing on laptops, USB Type-B is the Micro-USB port, and now there's USB Type-C.

The latest offering is much more advanced than its predecessors, and it was only a matter of time before Apple began using it on its Macs. It has a power output of 20V compared with USB Type-A's 5V, it's thinner than USB Type-A (8.3x26mm compared with 14x65mm) so allows Apple to make a thinner MacBook. It's also reversible like the Lightning cable so you won't try forcing it in upside down.

But what's most important about USB Type-C is that it's much more versatile



MACBOOK SPECS		
Price	£1,049	£1,299
Display	12in LED-backlit display with IPS technology, 2304x1440, 226ppi	12in LED-backlit display with IPS technology, 2304x1440, 226ppi
Processor	1.1GHz dual-core Intel Core M processor (Turbo Boost up to 2.4GHz) with 4MB shared L3 cache	1.2GHz dual-core Intel Core M processor (Turbo Boost up to 2.6GHz) with 4MB shared L3 cache
Memory	8GB of 1600MHz LPDDR3 onboard memory	8GB of 1600MHz LPDDR3 onboard memory
Storage	256GB PCIe-based onboard flash storage	512GB PCIe-based onboard flash storage
Dimensions	0.35-1.31x28.05x19.65cm	0.35-1.31x28.05x19.65cm
Weight	920g	920g
Graphics	Intel HD Graphics 5300	Intel HD Graphics 5300
Wireless	802.11ac Wi-Fi wireless networking; IEEE 802.11a/b/g/n; Bluetooth 4.0	802.11ac Wi-Fi wireless networking; IEEE 802.11a/b/g/n; Bluetooth 4.0
Ports	1x USB-C; 1x headphone	1x USB-C; 1x headphone
Camera	480p FaceTime camera	480p FaceTime camera
Audio	Stereo speakers; dual microphones	Stereo speakers; dual microphones
Keyboard and trackpad	Full-size keyboard; Force Touch trackpad	Full-size keyboard; Force Touch trackpad
Battery	Up to 9 hours wireless web surfing; up to 10 hours iTunes film playback; built-in 39.7Wh lithium-polymer battery; 29W USB-C Power Adaptor	Up to 9 hours wireless web surfing; up to 10 hours iTunes film playback; built-in 39.7Wh lithium-polymer battery; 29W USB-C Power Adaptor
Operating system	OS X Yosemite	OS X Yosemite

than USB Type-A, so can transfer data, charge devices and be used to charge the MacBook, and hook up to external displays thanks to video-out.

The catch, and the thing that's concerning potential buyers at the moment, is that you're going to need adaptors, unless you can switch to a

wireless way of working using the likes of iCloud, Continuity, AirPlay, AirDrop, AirPrint, and so on. This is what Apple is actually aiming for. Phil Schiller, the company's senior vice president of worldwide marketing said: "The only intelligent vision for the future of the notebook is one without wires, where you don't have to plug up cables to connect things."

According to website 9To5Mac, Apple will refrain from blocking certain types of accessories, which means you'll be able to use a USB Type-C external battery to charge up your MacBook when you're running low on juice.

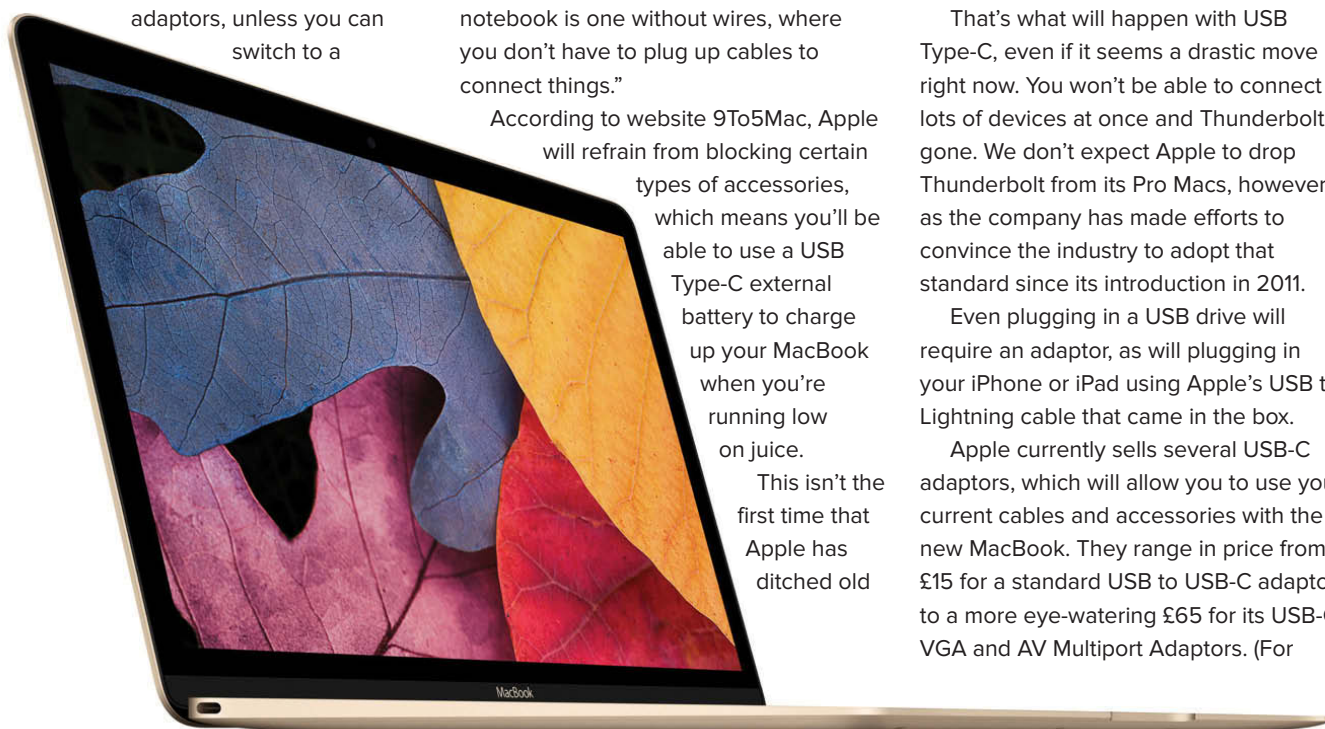
This isn't the first time that Apple has ditched old

technology. In 1998, the floppy disk drive was dropped from the iMac, and everyone freaked out. In 2008, Apple ditched the CD drive and the Ethernet port on the MacBook Air, and while there are still times when we wish we had one or the other, it's rare, and we've adapted.

That's what will happen with USB Type-C, even if it seems a drastic move right now. You won't be able to connect lots of devices at once and Thunderbolt is gone. We don't expect Apple to drop Thunderbolt from its Pro Macs, however, as the company has made efforts to convince the industry to adopt that standard since its introduction in 2011.

Even plugging in a USB drive will require an adaptor, as will plugging in your iPhone or iPad using Apple's USB to Lightning cable that came in the box.

Apple currently sells several USB-C adaptors, which will allow you to use your current cables and accessories with the new MacBook. They range in price from £15 for a standard USB to USB-C adaptor, to a more eye-watering £65 for its USB-C VGA and AV Multiport Adaptors. (For





more information, go to page 32.)

Eventually, though, we won't need these. LaCie has already announced that it's making USB-C versions of its Porsche Design Mobile Drive line, and we're sure many more new accessories are in the pipeline.

The new MacBook does have one other port – a 3.5mm headphone jack.

USB-C also means no more MagSafe, the magnetic power connector that has saved many MacBooks from crashing off of desks over the years.

Speed

Don't expect the speed you'll get with the MacBook Pro, though this laptop shouldn't be a complete slouch. Inside, it

has an Intel Core M processor, and while we won't be able to test it until we get the MacBook back to our labs, variations of that same chip have already been tested and have certainly proved to be plenty powerful enough.

The Intel Core M chip is a Broadwell chip that has been designed for use in exactly the kind of machine Apple has made. It can be used in a thin and completely fanless computer, namely the new MacBook but also other rival Windows machines. It's the first release of Intel's 14nm technology, and is reportedly so small that it's only about twice the size of the iPhone 6's logic board.

Apple has applied miniaturisation techniques that were used in the iPhone and iPad to make the New MacBook's logic board the most compact logic board ever. In fact, it's a whopping 67 percent smaller than the logic board found in the 11in MacBook Air.

Intel has demonstrated the kind of power you can expect from a Core M chip by comparing it with the Intel Core i5-520UM processor that was used in many laptops that were considered powerful around four years ago – laptops that are still being used by many today.

Intel claims that the new Core M chip can achieve double the performance of the older chip despite its smaller size, and can reduce power consumption by up to four times meaning longer battery life and/or smaller batteries for a lighter, slimmer design.

According to Apple, 3D gaming performance is up to seven times better than Intel's older chip, and seven times

faster at converting HD videos. Find out more about Intel Core M processors in our What is Intel Core M article.

As mentioned above, the MacBook has no moving parts, vents or fans. Not only does it help make the MacBook so thin, it also aims to improve efficiency and should make it completely silent.

There's also 8GB of RAM in the new MacBook, and Intel HD Graphics 5300. As for connectivity, the new MacBook has 802.11ac Wi-Fi and Bluetooth 4.0.

There is a FaceTime camera on the front of the new MacBook, but this one is only 480p rather than the usual 720p HD camera found on other Macs.

Battery life

Apple claims that the new MacBook has all-day battery life thanks to new battery technologies that allow 35 percent more battery capacity despite the thinner and lighter design. The display is designed to consume 30 percent less energy with the same brightness.

Apple's battery life estimates are nine hours of wireless web browsing and up to 10 hours of iTunes movie playback.

What about the new MacBook Air?

Everyone was expecting that Apple would update the MacBook Air with a Retina display. This wasn't the case, though it did get a slight update. The new 11in and 13in Airs now have fifth generation Intel Core processors running up to 1.6GHz rather than 1.4GHz, and boast Intel Graphics 6000. The 13in model included new, faster flash storage, too. (For further details, go to page 65.)



USB-C adaptors

Lewis Painter looks at how much they cost and where you can get them from

Apple announced a brand new MacBook at its 9 March event (see page 28), with the surprising introduction of USB-C. There has been some criticism of this, with anger at the removal of other ports including the MagSafe charging port, Thunderbolt and the SD Card reader.

However, Apple is selling adaptors that can extend the functionality of this port, and within months it's likely that other companies will too. It should also be noted that Apple isn't the first company to use USB-C and the new universal bus standard was agreed across the whole industry.

What is USB-C?

USB-C is a new standard that allows transfer speeds of 10Gb/s, opposed to the current 5Gb/s rate that's available with USB 3.0. This means that data transfer should be a lot quicker than the current USB offering, as well as the added bonus of decreased charging times. It's not faster than Apple's Thunderbolt 2 standard though, which offers 20Gb/s, with 40Gb/s transfer speeds rumoured for Thunderbolt 3.

Just like Apple's Lightning connector, USB-C doesn't have to be plugged in at a certain orientation.

It's not a one-trick pony either – USB-C handles data transfer, video output and power input. This negates the need for multiple inputs, and as Apple has demonstrated, allows companies to produce technology that's incredibly thin.

As a result of this flexibility, the new MacBook offers only a single port. So how does Apple expect people to charge their laptops and access an external HDD at the same time? In a word: adaptors.



Apple multiport adaptors

Apple's USB-C Digital AV Multiport Adaptor allows you to connect your USB-C MacBook to an HDMI display, a standard USB device and a charging cable – all at the same time. The adaptor allows you to connect incompatible USB accessories, such as flash drives and cameras, to your laptop.

It also supports full 1080p HD video output to your TV (HDMI enabled, of course), so you can mirror the MacBook's display and watch movies. There's a catch though, as the actual HDMI cable doesn't come with the adaptor and you have to buy that separately, which comes as a surprise when you consider that the adaptor costs £65.

There's another variation available that supports VGA displays, also costing £65.

Apple USB-C to USB adaptor

For those of you that only want to make older devices compatible with USB-C, there's a cheaper alternative available. Apple also sells a USB-C to USB adaptor, which lets you connect pretty much any standard USB accessory to a USB-C port.

While this method only enables you to use one device at a time, it's better than having to buy a host

of USB-C devices to go with your new MacBook. It's also lot cheaper than the multiport adaptors at £15.

Third-party adaptors

Belkin has also thrown its hat into the USB-C adaptor ring by announcing a USB-C to Gigabit Ethernet adaptor. This enables users to connect the new MacBook to Gigabit Ethernet networks using its USB-C port. Interestingly enough, Apple isn't offering its own version of the USB-C to Gigabit Ethernet adaptor, so instead users that rely on ethernet connections have no choice but to invest in third party accessories.

Belkin hasn't yet added the Gigabit Ethernet adaptor to its website but, like the other USB-C adaptors the company has recently announced, it has a suggested retail cost of between \$20 and \$30 (£15 to £25) and will be available to buy in the next few months.



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10 OS X tweaks

Get that little bit more from OS X with Keir Thomas' 10 sneaky little tricks and tweaks

1. Set text like a pro

Here's a neat trick that lets you tap Alt+W to select the current word under the text cursor, and Alt+P to select the current paragraph. Open TextEdit, click New Document, and click *Format* → *Make Plain Text*. Then type the following:

```
{
  "~w" = selectWord;;
  "~p" = selectParagraph;;
  "^~w" = (selectWord:, cut:);
  "^~p" = (selectParagraph:,
  cut:);
}
```

Click to save the file. In the dialog box, tap Shift+⌘+G, and then enter ~/Library. Create a new folder called KeyBindings and save your file to the folder, calling it DefaultKeyBinding.dict. Log out and back in again. This trick won't work in Microsoft Office apps (with the exception of Outlook 15.6), but works in most others.

2. Add a boot-time password

Some PC users add a password to their computer so that nobody but them can boot it. Macs allow this too, although if you have FileVault enabled you'll only see it when you attempt to boot from something other than the main boot disk.

To enable the boot password, restart your Mac and just before the Apple logo appears, press and hold down ⌘+R to boot to the Recovery System. Click *Utilities* → *Firmware Password Utility* and follow the instructions.

Be extremely careful when typing your new password and note it down. If you forget it, then only Apple can unlock your computer. This is probably why this feature is not a default setting.

3. Quick View inside zips

Quick Look is a jewel in the crown of OS X's features but it has a glaring omission: you can't Quick Look zip files to see what they contain. You're forced to

decompress them each time. Luckily, the developers behind BetterZip provide a free add-on that fixes the problem. You'll need to download the file (and unzip it), then open a Finder window, tap Shift+⌘+G, and enter /Library/QuickLook. Then drop the file into the folder (click Authenticate and type your password when prompted) and reboot.

4. Create a Start menu

Microsoft Windows is hardly a shining example of operating system excellence but the Start menu, which provides quick access to all apps, is certainly an efficient concept. You can create your own Start menu on the Dock via the following steps.

Open System Preferences, click the General icon, and change the Recent Items drop-down list to 30. Next, open Terminal (it's in the Utilities folder of Applications), then copy and paste in the following, which is all one line:


```
defaults write com.apple.dock
persistent-apps -array-add '{
"tile-data" = { "list-type" =
1; }; "tile-type" = "recents-
tile"; }' && killall Dock
```

The Dock will slide out of view, then return. Somewhere within it a new icon will have appeared, called Recent Items. Click it and a list of recently-used apps will fan out. It might contain only a small number of apps, but it will grow as time goes on. This is a stack like any other, so right-clicking will let you turn it into a fan, or a list. You can drag it to anywhere on the Dock. To delete it, just drag it up as you would any other Dock icon.

5. Speed up Safari

Modern browsers employ many tricks to shave milliseconds off the time it takes to load a web page. One of them is DNS prefetching, whereby the numeric IP address of each server used to construct the page, or which is linked to, is grabbed before it's required.

Enabling prefetching by default is bold because for a minority of users it can actually make things slower. Apple provides guidance on disabling prefetching but in a nutshell you can do so by quitting Safari, opening a Terminal window (it's in the Utilities folder of Applications), and then pasting in the following which is again a single line:

```
defaults write com.apple.
safari
WebKitDNSPrefetchingEnabled
-boolean false
```

Give it a try. It can be surprising the difference it makes.

6. Print selected text

One feature curiously missing from OS X is the ability to highlight some text on a web page or in an email, and then choose to print only that. However, the feature can be added easily.

Download the free Print Selection Service (tinyurl.com/LdgtjLv) add-on and install it (you'll need to right-click the installation package and select *Open*).

Log out when prompted, then open Terminal (it's in the Utilities folder of Applications) and paste in the following, which is again a single line:

```
sudo cp -r /Library/Services/
Print\ Selection.service ~/
Library/Services/
```

Type your login password when prompted, then log out and back in a second time. Open System Preferences and click the Keyboard icon. Click the Shortcuts tab and then the Services entry in the list on the left. Put a tick alongside Print Selection.

From now on, select the text you want to print, right-click the selection, select the Services submenu and then *Print Selection*. Alternatively, tap Shift+⌘+T.

7. Scroll to expand stacks

Here's a neat little hack that lets you activate stacks within the Dock by hovering the mouse cursor over the icon and scrolling up (scrolling down closes the stack). To activate it, open a Terminal window (it's in the Utilities folder of the Applications list), and type the following:

```
defaults write com.apple.dock
scroll-to-open -bool
TRUE;killall Dock
```

Then test it out on a stack or Dock icon. To turn the feature off if you wish, enter the following in a Terminal window:

```
defaults delete com.apple.dock
scroll-to-open;killall Dock
```

8. Get a desktop dashboard

Imagine the built-in Dashboard feature of OS X but redesigned by geeks. That's what GeekTool is (tinyurl.com/qxrma), and it lets you display data and images on your desktop. The data can be the output of shell commands, or a file that changes frequently such as a log file.

If this sounds like double-Dutch to you then you're perhaps not the kind of person GeekTool is aimed at (although it can still be useful), but for a percentage of the Mac userbase GeekTool is the

ultimate desktop hack. Geeklets are items you can simply install, and are collected on some websites, where you'll also find instructions on how to use GeekTool.

9. Make the Dock tiny

You can shrink or enlarge the Dock by clicking and dragging the bars that separate the applications from folder stacks. However, this will only take you so far. To make the Dock really small, which can be helpful on smaller screens like older MacBooks, you need to open the Terminal (it's in the Utilities of Applications) and type the following:

```
defaults write com.apple.dock
tilesize -integer 8;killall
Dock
```

If you want a really, really small size, try a 4 rather than 8 in that command. Obviously turning on Dock magnification in System Preferences helps make this trick feasible in day-to-day use. To restore the Dock to its normal size, just click and drag as described above.

10. Use the numeric keypad as a launcher

If you've a full-sized external Mac keyboard and you never, ever use the numeric keypad at the right of it, you can turn the keypad into a specialised launcher that activates OS X features whenever numbers or symbols on it are pressed – just like the keys along the top of the keyboard.

This is possible because OS X sees the numeric keypad as a separate range of keys. As far as it is concerned, hitting 3 or the equals sign on the numeric keypad is not the same as hitting 3 or the equals sign on the main keyboard. To create shortcuts, go to *System Preferences* → *Keyboard*, then click the Shortcuts tab. Next, select any feature for which you'd like to create a keypad shortcut, and double-click it at the right. Now press the key on the keypad you want to use. The only numeric keypad keys you can't use are the Enter key, at the bottom-right, and the Clear key at the top left (the key that's a box with a cross in it).



Upgrade an old Mac

Keir Thomas explains how to turn your old Mac into a powerhouse

What if we told you that you can take an older Mac and turn it into something that feels and acts like it's fresh from the Apple Store – including jaw-dropping performance, and accessing features such as Handoff or Fusion disk technology that are theoretically only available with latest models?

If you've a MacBook, Mac mini or iMac powered by an Intel CPU manufactured as early as 2007, then it can be surprising what's possible via a few hardware or software hacks.

What can't be upgraded

We hesitate to start on a down note but let's talk briefly about what can't be upgraded. Throughout this article we look at the Mac mini, iMac and MacBook ranges. We don't discuss the Mac Pro because that's designed from the ground-up for upgrading.

Put simply, it's not usually possible to upgrade the CPU in a Mac, or its GPU (that is, the graphics card). With Mac models featuring Thunderbolt you can attach an external GPU, but those Macs are recent models. Below we're only interested in Macs on their first step of their journey towards becoming vintage.

Some components can be swapped for replacements if they suffer damage or failure, and there are several different spares outfits online. You can swap out

a dead SuperDrive, for example, or a cracked screen for a replacement. But it isn't possible to take advantage of an upgrade at the same time – you can't fit a higher-resolution screen, or upgrade to a more powerful battery, or swap your SuperDrive for a Blu-ray model.

As for most of the other components in your Mac, however, it's open season.

Add new RAM

At no time in the history of computing has it been a bad idea to max-out the RAM of your computer. The best news? As your Mac gets older, RAM for it gets cheaper.

iMac: You may need a technical screwdriver to open a compartment on the bottom although on some iMacs a small panel beneath the vents on the back of the unit pops off when you press the button beneath.

MacBook (including Pro): On older MacBook models with a user-removable battery you'll have to remove the metal guard surrounding the battery slot. On newer models without a user-removable battery it's necessary to remove the entire bottom panel of the MacBook.

MacBook Air: Unfortunately, it's not possible to upgrade the RAM in a MacBook Air because it's soldered in place, with no memory slots.

Mac mini: On some models of mini the bottom panel can be easily popped off, although some require disassembly.

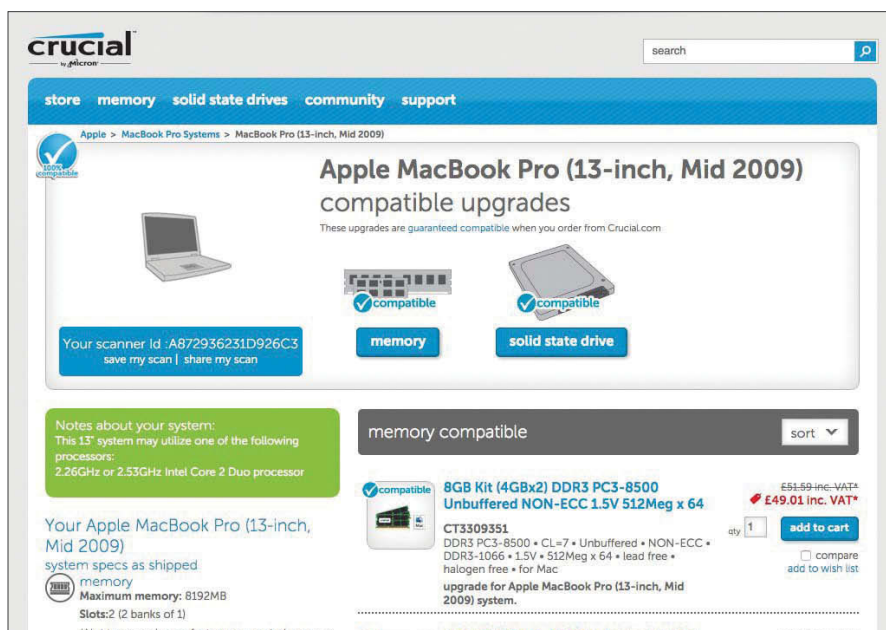
Apple provides an illustrated guide for memory upgrades: click *Apple* → *About this Mac* → *More Info*. Next, click the Memory tab and then the Memory Upgrade Instructions link.

You'll probably need to remove and abandon the existing memory modules to upgrade to the maximum amount of memory. For the easiest way to find out what to buy, visit Crucial's website (uk.crucial.com) and download its Mac memory scanner. To run this after download and unzipping, you'll need to right-click the app and select *Open*, then click the Open button in the dialog box that appears. Of course, you can take the technical details provided and use them to search online in order to compare prices – usually the DDR speed (for instance, DDR3 or DDR2) is required, along with the 'PC' figure (PC3-8500, for example). Most Macs take small outline memory modules, called SO-DIMMs.

You should fit as much RAM as you can afford. 4GB is okay, 8GB is good, while 16GB will future-proof your Mac, although most older Macs max-out between 4- and 8GB.

Pro tip: A small minority of older Mac models have been found to be able to take more than the 'official' maximum RAM stated by Apple.

RAM is usually fitted in two modules. If your Mac maxes out at 8GB, for example, then the best policy is to fit



two 4GB modules. Mixing and matching different sizes of modules is possible – 2GB with a 4GB, for example – but identically-sized modules of an identical technical specification (and ideally the same manufacturer and model) allow dual-channel operation. This brings a slight but significant performance boost, reckoned to be around 5 percent in real-life situations.

To discover your Mac's model details click *Apple* → *About this Mac*. Usually this takes the form of a year, such as a 13in MacBook Pro Mid 2009, but for some websites you might want to confirm you've got the right product by checking what Apple refers to as the "marketing model number". This can be found by again clicking *About this Mac*, then selecting the Support tab and clicking Specifications. This will open a web page listing all the technical details about your Mac. The model number will be a short burst of letters and numbers – something like MB991LL/A – and it will be listed in a table somewhere within that page.

Add an SSD or more storage

Replacing your boot drive with a solid-state disk (SSD) will mean your Mac boots within seconds and apps will load in the blink of an eye. Note that MacBook Airs have unique storage requirements, as discussed later, but

other MacBook owners, as well as Mac mini and iMac owners should prepare to have their minds blown.

The upgrade method of least resistance is to simply swap out your existing drive for an SSD. With a MacBook that doesn't have a removable battery, or Mac mini, you should be able to remove the bottom panel, much as you did for the memory upgrade, and appropriate the fittings from the existing drive (although some Mac minis may require disassembly). For MacBooks with a removable battery, the same panel in the battery compartment that protects the RAM can be removed to gain easy access to the hard disk, which it should be possible to remove by pulling a tag.

Sadly, on an iMac, replacing the disk is much harder. You'll first have to remove the screen, which can be challenging and brings a comparatively high risk of damaging something.

An alternative method of installation on a MacBook is to remove the SuperDrive and put the SSD in the gap it leaves. The original disk can be left in place and the SSD selected as the boot drive via the Startup Disk option in System Preferences. Because the optical drive uses a special SATA/power connector, a special caddy for the SSD is required, which will also hold it securely in place. These are usually inexpensive,

Memory scanner Crucial's app tells you what you need for your Mac's maximum RAM.

and some kits come complete with a USB connector that lets you use the removed SuperDrive externally.

MacBook Air owners have been aware of solid-state storage benefits since the very first model went on sale, although Apple refers to it as Flash Storage. They might be able to upgrade to larger storage, often with a speed boost over the original drive too, although their computers use a proprietary storage connector and require a specific upgrade.

Adding two or more SSDs

On some models of iMac or Mac mini, you might be able to fit an SSD to an unused SATA channel connector on the logic board, and squirrel it away beneath the existing disk, or under the SuperDrive. This might be in addition to the old drive, or you might simply fit two SSDs. You'll need a kit that includes mounts and cables. You'll be able to find these online. However, fitting a second SSD to an iMac or mini will very likely involve an almost complete disassembly of the computer.

Fitting two (or more) SSDs isn't as daft as it sounds. SSDs are more expensive than standard disks, with prices ramping-up sharply for higher capacities, and you might find two 256GB SSDs cost less than a single 512GB model, for example. However, not all drives are fully Mac compatible and manufacturers often don't document Mac compatibility. A good way of checking is to read user reviews on sites like Amazon.

Pro tip: SATA technology is backwards compatible, so a SATA3.x drive will work in computer running SATA2 or SATA1, for example.

Pro tip #2: Before fitting the SSD in your Mac, ensure the drive is using the latest firmware. Show-stopping bugs are sadly all-too common, and newer firmware can also mean improved speeds. Unfortunately, upgrading the firmware can usually only be done by temporarily attaching the SSD to a Windows PC and using special software. See the manufacturers site for details.

You'll need to clone your existing OS X installation plus data onto the new SSD. Arguably the easiest way of doing this is to create a Time Machine backup before fitting the new SSD and boot to the recovery console, before restoring to the new SSD. If all else fails apps such as SuperDuper or Carbon Copy Cloner can be used to clone one disk to another.

Create a DIY Fusion Drive

If your Mac ends-up with the original drive plus an SSD alongside, an exciting prospect open up: coupling the two disks together to create a DIY Fusion drive.

If you have two SSDs installed, you can use the same technique to combine them into a single disk, akin to RAID. Fit a 128- and 256GB drive to your Mac, for example, and you'll end up with what appears to OS X to be a single 384GB SSD. (In reality, it'll be 372GB because of the strange way that disks manufacturers measure size).

The technique required to create a DIY Fusion drive is somewhat advanced and induces palm sweats in even the most technically savvy. You'll need to wipe your existing data and restore it, for example. We assume for the purpose of these steps you're using a Time Machine disk directly attached to your Mac:

1. Start by creating a full Time Machine backup – click the Time Machine icon on the menu bar and select Back Up Now. For insurance purposes you might also want to create a Yosemite install USB stick too, which you can use to boot and reinstall if anything goes wrong.
2. Reboot your Mac and hold down Alt before the Apple logo appears. When asked to select a disk, choose to boot from your Time Machine disk.
3. You'll boot to the Time Machine disk's recovery console. At the OS X Utilities listing, choose to open Disk Utility.
4. You must now wipe and repartition both internal disks. Start by selecting the partition on the first disk on the left of the screen – this is the entry indented below the main entry for the disk – then select the Erase tab and select to create a Mac OS Extended (Journaled) partition. Repeat this step on the other disk.

5. On each disk in turn, select the main entries for the disk in the list at the left and opt to create a new partition on both by selecting the Partition tab, then '1' from the drop-down beneath Partition Layout. Again choose Mac OS Extended (Journaled) for the format. However, click the Options button and select the GUID Partition Table option.
6. Quit Disk Utility, then select to open Terminal by clicking *Utilities* → *Terminal*.
7. Type the following commands:

```
sudo hdiutil attach /
Applications/Install\ OS\ X\
Yosemite.app/Contents/
SharedSupport/InstallESD.dmg
```

```
sudo asr restore -source /
Volumes/OS\ X\ Install\ ESD/
BaseSystem.dmg -target /
Volumes/Untitled -erase
-format HFS+
```

(During this step, you'll be prompted to confirm you want to erase the contents of Untitled. Type **y** and press Return.)

```
sudo rm /Volumes/OS\ X\ Base\
System/System/Installation/
Packages
```

```
sudo cp -a /Volumes/OS\ X\
Install\ ESD/Packages /
Volumes/OS\ X\ Base\ System\
System/Installation/Packages
```

```
sudo cp -a /Volumes/OS\ X\
Install\ ESD/BaseSystem.
chunklist /Volumes/OS\ X\
Base\ System
```

```
sudo cp -a /Volumes/OS\ X\
Install\ ESD/BaseSystem.dmg /
Volumes/OS\ X\ Base\ System
```

```
hdiutil detach /Volumes/OS\ X\
Install\ ESD
```

8. When finished, quit Terminal. You'll be returned to the main Recovery screen, from where you can select to restore from a Time Machine backup. Your new DIY Fusion drive will appear as a destination.

When rebooting for the first time after restoring your data, you might see a flashing question mark folder. Turn your Mac off and then on again, but this time hold down the Alt key. Select the first hard disk entry you see by using the cursor keys and hitting Enter. Once you've booted into OS X, open System Preferences and select Startup Disk, then select the boot disk and click Restart.

Following this your Mac will appear to have only one disk. You can enable FileVault in the usual way within the Security section of System Preferences.

Get Handoff, AirDrop and better Wi-Fi

Only recent Mac models are compatible with the Handoff/Continuity features introduced with Yosemite. This allows your Mac and iOS devices to instantly pick up on emails, websites, documents, map locations, and much more.

Older Macs lack the low-power Bluetooth 4.0 mode required. Alas, buying an inexpensive USB Bluetooth 4.0 dongle doesn't fix the situation.

On some Mac mini or MacBook Air models you might not even need to upgrade your hardware, while on other Macs it might be possible to upgrade the AirPort card in your Mac instead of using a USB dongle, which might have the added benefit of upgrading your Mac's Wi-Fi capabilities to faster speeds. Start by searching the forums of iFixit, where such questions are frequently asked. Once again bear in mind that fitting an AirPort upgrade will probably involve partial or full disassembly of your Mac. Additionally, note that AirPort cards are usually expensive.

ExpressCard options

For a few years some MacBook models featured an ExpressCard slot. Although the technology is in the dying throes of its lifespan, you can still get some useful add-ons, such as adaptors that bring USB 3.0 to your Mac. Just search your favourite site. However, always check for Mac compatibility. Again, this can often be done by reading the reviews of buyers in the product description.

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Apple Watch alternatives

Ashleigh Allsopp rounds up the hottest smartwatches to see what Apple is up against

Apple finally announced the much-anticipated Apple Watch at its 'Spring Forward' event on 9 March. We look at the device in our in-depth guide on page 12, but what about the competition? Samsung, LG, Pebble, Motorola and Sony all sell smartwatches, so here we'll see what devices Apple is up against.

Samsung Gear S

Price: From £329

Compatible with Android

Arguably Apple's biggest rival, Samsung has several offerings in the wearable market, and its repertoire just keeps growing. The Gear S (which stands for Solo) has Bluetooth, wireless and 3G connectivity, so it can work independently of a smartphone to allow you to make and receive phone calls, texts, emails and other notifications.

That's why it's more expensive than Samsung's other smartwatch offerings, starting at £329. The Gear S runs Tizen OS, just

like the Samsung Gear 2. It's available in black or white, and has a 2in curved screen that fits comfortably around the wrist. Other features include a heart-rate scanner, an IP67 rating meaning it's both dust- and waterproof. If you want to use it as a standalone device, you'll first need a Samsung smartphone to activate it, then you'll have to pay for a second tariff and have a second phone number dedicated to your smartwatch.

Samsung Gear 2

Price: £250

Compatible with Android



Samsung's second smartwatch is the Gear 2, which has a Tizen-based operating system rather than Android. It was met by a significantly better reaction than the original Gear.

Priced at £250, it's not a cheap piece of kit. However, it's feature-packed and stylish, with

a smaller and thinner face and a better-looking strap than its predecessor, which can be switched with other watch straps if you choose.

Samsung appears to be covering all bases, offering the obvious wristwatch functionality as well as fitness tools, a music player, notifications and even the ability to answer calls, take photos and use the device as a remote control.

One of the most common features among smartwatches is health and fitness tracking, something the Apple Watch is also focused on. The Gear 2 has a heart-rate sensor as well as a pedometer that can be used with the S Health app to track your exercise.

Samsung's watch also has an IP67 certification, meaning it's resistant to dust and water up to one metre, making it a pretty durable device. It's particularly reassuring, as washing your hands, making a cuppa and simply walking outside in the UK can result in wet wrists.

You'll need a Samsung smartphone to use the Gear 2, though, as it's only compatible with the company's own devices, connecting via Bluetooth. Models supported include the Galaxy S5, Note 2, S4, S3 and Mega.

Samsung Gear S

Samsung Gear 2 Neo

Price: From £180

Compatible with Android

The Samsung Gear 2 Neo, which is largely similar to the Gear 2 but is significantly cheaper, at £180. Why? The biggest difference is that the Neo doesn't sport a camera. They both have the same 1.63in Super AMOLED display with the same 278ppi resolution, and boast the same fitness tracking, music and remote control features.

Some may prefer the Gear 2 Neo over the Gear 2 if the camera isn't important to them, as it's slimmer and lighter thanks to the omission of the snapper and, of course, there's that £70 you'll save.

Samsung Gear Live

Price: £169

Compatible with Android

Samsung's Gear Live runs Google's Android Wear operating system, and was one of the first smartwatches to do so. It has a 1.64in Super AMOLED display and is powered by a 1.2GHz processor paired with 512MB of RAM. There's 4GB of internal memory and a 300mAh Li-ion battery that Samsung describes as "all-day". It's also got a heart rate monitor for those popular fitness applications, as well as Bluetooth 4.0, accelerometer, gyroscope and compass. It's IP67 certified like the other

Samsung smartwatches, and comes with a changeable strap available in black or 'Wine Red.'

The good news about the Gear Live is that you don't have to own a Samsung smartphone in order to use it. It's compatible with any Android smartphone running version 4.3 (Jelly Bean) or higher. Plus, it's cheaper than the company's other offerings at £169.

Pebble Time

Price: \$119 (£133)

Compatible with Android and iOS

The Time is Pebble's third smartwatch offering, following on from the success of the company's original offering. It measures just 9.5mm thick, and while it keeps the Pebble 'style', you can tell this is a complete redesign of their smartwatch. It's available in three colours; black, white or red with varying colours of bezel and silicon bands.

The Pebble Time comes with a new colour ePaper display, which is a huge step up from the black and white screen used in the original Pebble. While you may question Pebble's use of an ePaper display opposed to an LCD or OLED screen, it makes more sense when you realise that this allows the Pebble Time to last seven days on a single charge.

Similar to the Apple Watch, the Time also has the ability to swap watchstraps. However, Pebble decided



Samsung Gear 2

to take a different route with the Time and even though you get a silicone band with the watch, any standard 22mm watchstrap should fit. Like many other smartwatches, the Time handles all notifications from your phone – but it doesn't stop there. The Pebble Store has over 6,500 apps and watchfaces ready for you to use, including various health and fitness apps that make use of the sensors built in to the watch.

The Pebble Time is currently on Kickstarter where you can get your hands on one for a reduced \$179 (£115) and it's due for release in May.

Pebble Time Steel

Price: \$299 (£200)

Compatible with Android and iOS

Pebble also launched a new generation of its Steel series – the Pebble Time Steel. Also on Kickstarter for a slightly reduced price of \$250 (£170) but with an RRP of \$299 (£200) will appeal to those of us that prefer the look and feel of a stainless steel watch on our wrists.

To be more specific, the watch has a CNC-finished 316L stainless steel casing and comes with both a premium leather and stainless steel watchstrap. Not enough to merit the upgrade? Pebble has also upped the battery life for the Time Steel, clocking in up to a whopping 10 days of battery life on a single charge.

The Time Steel is available in three finishes; silver with a stone leather band, Gunmetal black with a black leather band or gold with a red leather band with the latter being suspiciously similar to the £13,500 Apple Watch Edition.



Samsung Gear 2 Neo

Apart from the design and improved battery life, the Time Steel is largely the same as the Time. It is slated for release in July.

Huawei Watch

Price: £TBC

Compatible with Android

The Huawei Watch was announced at Mobile World Congress (MWC) this year and is looking to compete with other mid-range smartwatches. It comes with Android Wear, which is good news for Android users, though this means it isn't compatible with an iPhone.

Similar to the Apple Watch, the Huawei Watch boasts a Sapphire Crystal display and stainless steel case making it look and feel like a gorgeous watch and not just a cheap, plastic smartwatch. Huawei decided to opt for the more traditional circular display for their watch – and while it looks beautiful, circular screens can throw up issues, especially with text cropping.

In regards to health and fitness related activities, the Huawei Watch will track your steps, activities and your heart rate. It's described on the company's website as an "intelligent data centre,"



Pebble Steel

giving you an insight into your health and enabling you to change the way you exercise.

The Huawei Watch boasts over 40 interfaces to choose from and a selection of apps courtesy of Android Wear.

LG Watch Urbane and Urbane LTE

Price: Urbane, £299; Urbane LTE, £TBC

Compatible with Android

The LG G Watch R was unveiled by LG in 2014 when it was only one of a few smartwatches with a circular display. Fast-forward to MWC 2015 and LG has announced two newer and more stylish watches, dubbed the Watch Urbane and Urbane LTE.

The Urbane and Urbane LTE both boast the same circular OLED display as their predecessor and is set in a

polished gold or silver steel body. The straps, like the Pebble Time, are interchangeable with any standard 22mm watchstrap – unlike Apple, which has designed the Apple Watch so only its custom, fairly expensive watchstraps fit.

The Urbane runs a custom version of Android Wear while the Urbane LTE, which is slightly bigger, runs its own separate operating system with phone and wallet functions.

Both come equipped with a heart-rate monitor, barometer (for elevation) and 4GB of storage. It doesn't however have onboard GPS like the Sony SmartWatch 3. It boasts an IP67 water and dust resistance rating but it isn't meant for showering or swimming.

The LTE really sets itself apart with 1GB of RAM (the standard model has 512MB) as well as a larger battery, 700mAh compared to 410mAh. It doesn't stop there though – it has 4G LTE connectivity built in and offers NFC and Wi-Fi, features that seem to be unique even when compared to competitors.

You can currently pre-order the LG Watch Urbane for a cool £299 – the Urbane LTE pricing hasn't been announced yet but judging on the price tag of its little brother, it'll be expensive.

Pebble Time Steel



Alcatel OneTouch Watch



Alcatel OneTouch Watch

Price: \$150 (£100)

Compatible with Android and iOS

Introduced at CES 2015, the Alcatel OneTouch Watch attracted lots of attention thanks to its stylish design and good features in a package that comes with a small price tag. It's not yet available in the UK, but it'll cost \$150 in the US when it goes on sale in March, so we expect it'll cost around £100.

The OneTouch Watch looks a lot like the Motorola Moto 360, with a round screen that comes in different styles like the Apple Watch. It comes in chrome, steel or plastic and is available in a range of colours. Alcatel has gone for its own software rather than opting for Android Wear, which means the Alcatel OneTouch Watch works with iOS and Android smartphones via Bluetooth or NFC if available.

In addition to all of the normal sensors for counting steps, the OneTouch Watch also boasts an optical heart rate sensor, despite its small price tag. It also

provides the usual notifications for messages, calls and social media apps.

Garmin Vivoactive

Price: £TBC

Compatible with Android and iOS

Also launched at CES 2015 in January was the Garmin Vivoactive smartwatch, a GPS-enabled smartwatch that's aimed at fitness enthusiasts.

It has a squared design like the Apple Watch, and is available in black or white with a range of swappable straps. Like the Alcatel OneTouch Watch, it doesn't run Android Wear, but rather Garmin's own software that allows it to work with both Android or iOS devices. It's waterproof up to 50m, so ideal for swimmers, and also takes advantage of Garmin's map database to provide really helpful information for golfers, including the distance to the hole and what the par is for that particular hole.

We're expecting the Garmin Vivoactive to cost around £200, which is reasonable for a feature-filled smartwatch like this with built-in GPS. This could be a real winner for Garmin when it becomes available,

Garmin Vivoactive



first in the US in March and then in the UK later this year.

LG G Watch

Price: £159

The LG G Watch was launched at Google I/O in June 2014. It's available from the Google Play Store for £159, so it's reasonably priced and cheaper than Samsung's offerings. LG's watch sports a 1.65in IPS LCD display powered by a 1.2GHz processor. Like the Samsung Gear Live, it has 4GB built-in memory and 512GB RAM. It's dust and water resistant, and has metal charging contacts rather than a clunky Micro-USB that would otherwise be required. It's also got an all-day battery.



LG G Watch R

LG G Watch R

Price: £199

Compatible with Android

The LG G Watch R is one of the best smartwatches we've seen to date. It comes with a stainless steel frame and a leather strap that you can change thanks to the standard 22mm size. Just like the G Watch, it's IP67 rated and has the same processor, RAM and internal storage. You'll need a smartphone running Android 4.3 (Jelly Bean) or above to use this device.

Motorola Moto 360

Price: £170

The Motorola Moto 360 launched in September 2014 to a very positive

reception. Our colleagues over at *PC Advisor* have described the Motorola Moto 360 as “the best smartwatch you can buy right now,” though we suspect that title may be stolen by the LG G Watch R when it arrives.

It’s another Android Wear smartwatch, running Google’s made-for-smartwatches operating system.

Like some of its rivals (though not the Apple Watch), the Moto 360 is dust- and waterproof with an IP67 rating. It uses Bluetooth 4.0, has 4GB of internal storage and 512MB of RAM.

Pebble Steel

Price: £179

Compatible with Android and iOS

The Pebble Steel costs £179 and ships free worldwide, so it’s cheaper than many of its smartwatch rivals. It looks much like a traditional wristwatch, and can act just like one too, but it also includes the ability to run apps and receive notifications.

Unlike the Samsung Gear and the Android Wear range, the Pebble can communicate with many Android and iOS devices, so an iPhone user could buy and use a Pebble Steel smartwatch now if they wish to.

Pebble even has its own app store that’s open to submissions from third-party developers, so expect new capabilities to arrive on a regular basis.

Unlike the Samsung smartwatches, though, the Steel’s display is ePaper with a low, 175ppi resolution, so, while the battery life is likely to be longer, you’ll only see pixellated, black and white images on the screen.

The Pebble Steel has a stylish stainless steel band, and the option of leather watch bands.

Asus ZenWatch

Price: £199

Compatible with Android

Asus has gone for a rectangular watch face for the ZenWatch, like many of its rivals, with a 1.63in AMOLED Gorilla Glass 3 screen that’s curved to create what Asus calls a 2.5D effect. It has a 1.2GHz Qualcomm Snapdragon 400

processor, 4GB storage and 512MB of RAM. As can be expected from most smartwatches, it has a heart-rate monitor and Bluetooth 4.0.

Sony SmartWatch 3

Price: £189

Compatible with Android

Another of Apple’s big smartphone and tablet rivals is Sony, which also has a smartwatch offering running Android Wear. The SmartWatch 3 can connect to Android devices via Bluetooth to act as an extension of your smartphone or tablet. It comes with a variety of different strap options available, each of which is easy to swap out should you get bored of it.

There is 4GB of onboard storage, which can be used to store some songs if you want to, and there’s also built-in GPS, something many other smartwatch rivals lack. Combined, those two features mean you can leave your smartphone behind when going out for a run, for example, but still gather data about where you’ve been and how far you travelled. There’s no heart-rate monitor, though.

You can’t use the SmartWatch 3 to make a call in the same way as Samsung’s Gear products (there’s no microphone or speaker built in), but you can use it to remotely make or receive calls if you’re using a Bluetooth headset.

As with the other smartwatches in this round-up, you’ll also receive notifications

including text messages, emails, calls, Facebook, Twitter and more.

Sony’s watch also boasts NFC, which means you can pair it with any NFC compatible



Moto 360

Android phone with one touch. There’s no camera, but it is water, dust and scratch-resistant and we think it’s rather good looking.

It’ll cost you £189, so it’s cheaper than Samsung’s offerings but more pricey than those available from the likes of Pebble and Martian.

Martian Notifier

Price: £129

Compatible with Android and iOS

Cheaper still, though, are the Martian Notifier smartwatches. As the name suggests, the Notifier watches have a primary aim of providing the wearer with easy-to-view notifications without the need to get out a smartphone. Any notifications that your iOS or Android device can receive can be shown on that small display just like on the Martian Voice Command watches.

You can’t use the watch to make calls or send texts though, and, again, there are no additional apps or fitness features included. Really, the Notifier simply acts as a stylish wristwatch that can be used as an extension of your iPhone’s screen but is unable to allow any further actions to be carried out, so it’s one of the most basic, but also the cheapest, smartwatches available at £129.

It can, however, be used as an alarm and a way of finding your lost phone, too, and it even offers a remote control



Asus ZenWatch



Martian Notifier

for your device's camera for better selfies, if that's what floats your boat.

Cookoo 2

Price: \$149 (£100)

Compatible with Android and iOS

The Cookoo 2 watch is similar to the Martian Notifier in terms of the features it offers. You'll receive notifications for incoming calls, missed calls, social media, reminders, text messages, emails and more. You'll also be alerted if you've left your connected iOS or Android device behind, or if your iPhone or iPad has almost run out of power.

It, too, boasts that selfie-taking feature that the Notifier has, and can also act as a remote control for your music. Battery life is excellent thanks to the standard watch battery that can be easily replaced. Of course, that means you'll eventually need to buy a new battery, though. The display of the Cookoo is situated in the middle of the circular watch face, behind the hands of the traditional watch.

The UK price for the Cookoo 2 hasn't been announced yet, but it's \$149 so is likely to be around £100 when it arrives here. Its predecessor was £80, and is still available to buy, with similar features but an older and less stylish design.

MetaWatch M1 Core

Price: £235

Compatible with Android and iOS

Stylish in design but basic in specs, the MetaWatch M1 Core is available in

various designs including a stainless steel option and limited edition gold and rose gold modes, with a monotone, low-res display that'll remind you of the original Pebble. This does mean an almost week-long battery life, though.

MetaWatch has teamed up with fitness-tracking company Misfit to utilise some of its technology and app features within the M1 range.

The M1 Core connects to your iOS or Android device via Bluetooth, and uses a dedicated app to help you choose and rearrange widgets that display on your watch. In addition to the fitness features, you can get notifications, see the weather forecast and control your music.

It's pricey at around £235 for the stainless steel one, though they do seem to be on offer at time of writing with significant price cuts. The cheapest M1 available right now is the M1 Color Red and M1 Color White, which are currently available for around £100.

Qualcomm Toq

Price: £150

Compatible with Android

Yes, we're still going, but we've reached the last device in our round-up. We told you the smartwatch market is getting quite busy, didn't we? Next up is Qualcomm's Toq (we love the name).

The Toq is a smartwatch that works with Android devices, with a dedicated Toq app for customisation and configuration. It can allow you to receive notifications and accept or decline calls, though you can't make a call directly from the watch. You'll get access to your calendar and music, and can also add weather and stocks apps.

Qualcomm has recently released an update to the Toq's Android app that adds activity-tracking features to the device. While still in beta form, the 'Activity' feature should be able to monitor your daily activities and award you activity points.

The Toq uses Mirasol display technology that uses reflected light to minimise power and help you view it in any conditions, even in bright sunlight.



Qualcomm Toq

Macworld's buying advice

The list of wrist-worn tech goes on and on, but we've stuck to what we would describe as a smartwatch here. Alternatives in the smartband and activity tracker categories include the Fitbit Flex, Sony SmartBand and SmartBand Talk, Razer Nabu, Jawbone Up, and Lenovo Vibe Band VB10 from CES 2015, but they generally stick to health and fitness purposes with a few added extras here and there.

But the Apple Watch is more than a smartband or activity tracker, comparing more closely to the smartwatches we've included in our round-up.

With such strong competition already becoming established in the wearable tech market is Apple too late? The Apple Watch is expensive, and doesn't offer much more than most of its rivals, so it'll be interesting to see how well the smartwatch performs when it arrives on 24 April.



Sony Smartwatch 3



Photos for OS X guide

Karen Haslam reveals what we can expect from Apple's brand-new Photos app

Alongside all the features found in Yosemite, Apple promised us a new app for OS X called Photos, which will provide all the features found in the iOS version. Over the following pages, we round up what you can expect from the new software and seek to answer all your questions concerning Photos for Mac.

Release date

When Apple's Craig Federighi introduced Photos alongside OS X Yosemite at Apple's WWDC 2014 conference, he didn't give a launch date but said: "It's going to be shipping early next year [2015]." Back then we estimated it would arrive before the end of the second quarter of FY 2015 (that's before 31 March 2015). However, at the recent Apple Watch event on 9 March, we weren't provided with any information on its

availability, so at the time of writing (mid-March) we were still waiting.

Compatible Macs

If your Mac runs Yosemite, then you'll be able to use the new program. Apple's latest OS is available on the following:

- iMac (mid-2007 or newer)
- MacBook (late 2008 aluminium or early 2009 or newer)
- MacBook Pro (mid/late 2007 or newer)
- MacBook Air (late 2008 or newer)
- Mac mini (early 2009 or newer)
- Mac Pro (early 2008 or newer)
- Xserve (early 2009)

Interface

The new application has been designed to replace iPhoto, currently the primary way for most people to view and edit images on a Mac. The arrival of Photos for Mac will also see the demise of Aperture,

though, the new app isn't a replacement for that professional level application.

Photos for OS X looks similar to the iOS edition, but has also inherited some design elements from Yosemite.

As with the iOS version, your photos and video can be viewed in Years, Moments and Collections views.

If you click on the Years view, you'll see tiny images of all the photos you took that year. Tap on a thumbnail to see a full-size picture. If you tap and drag around your Years folder, slightly larger versions of individual images will pop up so you can find the one you're looking for.

The next option – Moments – displays all your images taken at a particular event, says your friend's birthday party.

Finally, Collections is comprised of a series of Moments that took place in the same place – Apple gives the example of photos taken while on holiday.

You can also locate images taken at a particular location by clicking on the place name that appears in the top-left of the window, this will take you to a map with thumbnails of the images you have taken at that location over the years.

The new application has been designed to replace iPhoto, currently the primary way for most people to view and edit images on a Mac

Picture view OS X Photos offers Years (pictured), Collections and Moments views.

Other Mac viewing options include Photos, Shared, Albums (such as Faces, Last Import and Favourites) and Projects. Projects are in essence slideshows, books, cards and calendars, and have been tweaked and improved compared to those found in iPhoto (and Aperture). For example, the book creation tool is more streamlined, and there is a new Square book format as well as a couple of new book themes.

There's also find a new option for printing panorama images and an option for ordering square prints.

Viewing images

The software offers a number of options for viewing, managing and sharing your photos. These include:

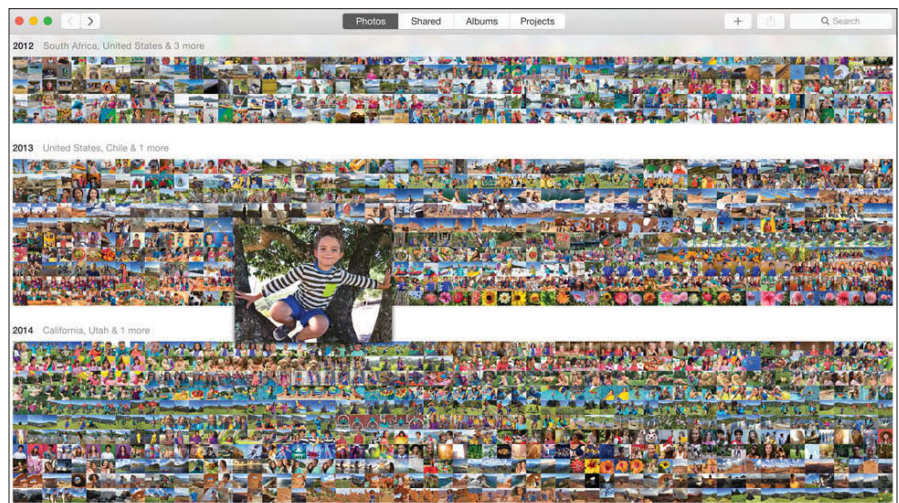
- Double-click on an image's thumbnail to view it full-sized.
- Mark an image as a favourite by clicking the favourite button in the toolbar
- Click the Plus button to add an image to an album, smart album, or project.
- Click the Share icon to send that image to iCloud Photo Sharing, Mail, Twitter, Messages, AirDrop or Facebook.
- Press \mathbb{I} to see the Info window. You will be able to see information about the image including: (some) EXIF data, the location (if it was geotagged), keywords, and face ID.

Editing images

Photo editing tools are similar to those in the iOS version. Click Edit to access a list of options, including Enhance, Rotate, Crop, Filters, Adjust and Retouch.

- Enhance applies the changes most likely to improve an image.
- Rotate lets you rotate photos in 90-degree increments.
- There are eight filters: Mono, Tonal, Noir, Fade, Chrome, Process, Transfer and Instant.
- The software's retouch tools allow you to remove spots and blemishes.

Sharing photos After enabling iCloud Photo Sharing you will see the photo streams you are sharing, or have access to, under Shared.



• Crop features a wheel similar to the one in Photos for iOS, and has a tool for straightening the image (as well as an Auto button that will straighten the image automatically, according to the horizon). You can also choose the aspect ratio for your crop, as in iOS Photos.

• The adjustments available include Light, Colour and Black and White, which are controlled via smart sliders. For example, if your image is too dark, you can click on the Light tool and drag the slider to the right to lighten the image. The software doesn't just change the light levels, but also exposure, highlights, shadows, brightness, contrast, and black point. Photos calculates the best look for the overall image. This simplifies the way you edit photos, but maintains fine-tuning behind the scenes.

If you are thinking this means you can no longer fine-tune images, you are

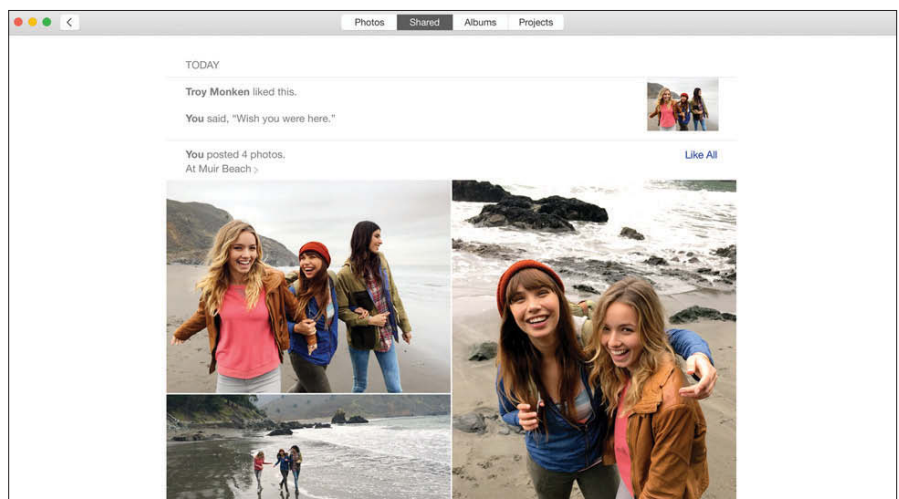
wrong. Click on the downward pointing triangle next to each control to see a series of other controls such as Exposure, Highlights, Shadows, Brightness, Contrast, and Black Point. You can tweak until you are happy with your image.

When you click the Add button in the edit area even more options are revealed, such as Histogram, Sharpen, Definition, Noise Reduction, Vignette, White Balance, and Levels.

When you edit images this way, you aren't actually changing the original image in any way, images are stored in their original format and resolution – including raw images. Photos just shows that image with your changes applied.

iCloud Photo Library

The key advantage of Photos is its close integration with iCloud, and in particular Apple's new iCloud Photo Library service.



iCloud Photo Library is currently in beta form on iOS devices (you can find it under *Settings* → *iCloud Photos*). It will store all the photos and movies taken on all your iOS devices, and eventually any images you import to your Mac, on Apple's iCloud servers. You will then be able to view your iCloud Photo Library on all your devices.

You will likely need to add more iCloud storage if you want to be able to view all your photos on all of your devices. You can read more about iCloud here. The iCloud pricing options are as follows:

- 20GB (79p per month)
- 200GB (£2.99 per month)
- 500GB (£6.99 per month)
- 1 TB (£14.99 per month)

Don't worry, if you don't want to host your photo library in the cloud you don't have to, you will still be able to store your images in a folder on your Mac (or on a separate storage device).

You can also choose to store images both in the cloud and on your Mac. To do so, go to *System Preferences* → *iCloud* → *Download Original To This Mac*.

The benefit of housing your photos in the cloud is that if you edit an image your changes will appear on all your devices.

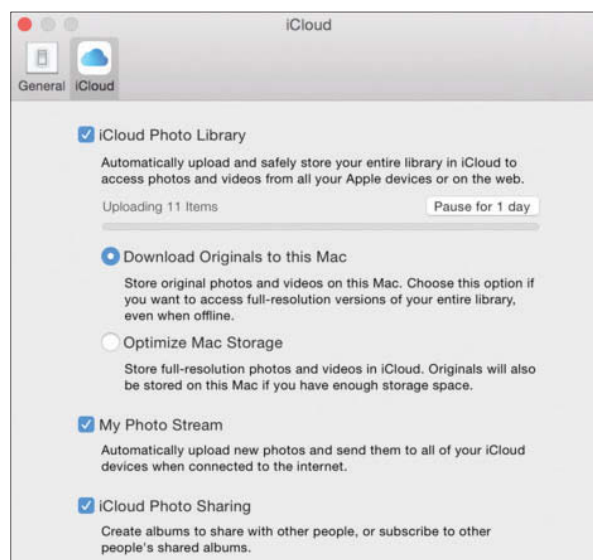
Currently, you can't access iCloud Photo Library images in OS X, which is why you should be careful before switching it on in iOS.

How to prepare your iPhoto library for Photos for OS X

When Photos for OS X launches, you'll be asked whether you'd like to import your iPhoto library. We advise that you clear out any duplications and poor photos in your iPhoto library first. Here's how:

- If you have managed to import lots of duplicates, you could try Propaganda Software's Duplicate Annihilator for iPhoto (\$8, brattoo.com).
- Remove any thumbnail images by searching for 240 – this will pull up any 240x180 thumbnails that may have been created in iPhotos past. But make sure that you don't delete any 2400-pixel images while you are at it.
- If you take a lot of screenshots on your iPhone, or random images that you

Library iCloud Photo Library stores all your photos on Apple's servers.



don't intend to keep, search for the images taken with your current iPhone (or any iPhone, or for that matter iPad, you have ever owned).

- You can refine your search further if you create a Smart Album. Choose *File* → *New Smart Album* and, as well as searching for the camera model, you can search for other information such as ISO. This way if you wanted to find images you'd taken in low light you could search for ISO greater than 1250 and weed out the worst of your low light photos. Having identified these images, the issue is that you can't just delete the images in a Smart Album because doing so won't delete the original image.

- If over the years you have accumulated more than one iPhoto library, whether to avoid slow downs, or because you have had to archive photos as you ran out of space, you may be wondering if you will be able to combine your photo libraries.

Unfortunately, it doesn't appear to be possible. If you have multiple iPhoto libraries, you hold down the Alt key while launching Photos and then, in the Choose Library window that appears, select which library to use.

There are, however, apps you can use that will help you combine your iPhoto library before you import it to the Photos app. Our colleagues at *Macworld US* recommend iPhoto Library Manager (\$30 [£19.50], fatcatsoftware.com).

Will you have to import all your iPhoto images?

That appears to be the case, but if you don't want the whole of your library to sync to iCloud, we suggest you create a default library that will sync, and a second one for images you don't want to sync.

If you have two libraries and want to switch between the two, close Photos, and when you restart the app hold down the Alt key and select the album you want.

What happens to the photos in you iPhoto library when you import them?

When you 'import' images into the Photos app, this won't cause them to be duplicated. Photos will work with those images that are stored on your Mac.

Should you delete your iPhoto library after importing into Photos?

When testers downloaded the beta version of Photos, it appeared that the iPhoto library was duplicated, with a separate, identically sized, iPhoto library and Photos library. Even the Finder indicated that the new Photos library was taking even more space than the iPhoto library. Except it isn't.

Both libraries are pulling images from the same location, so you can edit them in the app. If you are worried that deleting your iPhoto library will leave you with no images, don't. When we imported an iPhoto library into Photos, and then

deleted the iPhoto library, the images remained in the Photos library.

Do you have enough space to import your photos into Photo?

If your iPhoto library is getting on for 30GB, you might be wondering if you will need more than 30GB of space to import it into Photos. Luckily not: you will not be duplicating your images, just directing Photos to the library on your Mac where the photos you wish to sync exist.

Will Photos maintain your album structure?

Photos' folder structure is different to iPhoto. Rather than filtering your images into Events, your pictures will appear in Albums. When you import your library all your images will appear in an iPhoto Events album in date order. Luckily, you can batch change dates. Select the image and choose *Image* → *Adjust Date and Time*.

Will Photos import Events from iPhoto?

When you import your iPhoto library you will see an iPhoto Events album in Albums. Inside this album you will find your Events listed by date.

Can I maintain star ratings?

Photos lacks the 0 to 5 Star rating system, only letting you make an image a favourite. However, that doesn't mean you will lose the star ratings you've added to iPhoto – Photos turns them into keywords. To find your 5 Star photos pop 5 Star into the Photos' Search field.

Will photos have to be stored in iCloud?

You can choose to store your images in the cloud or to store them locally. You don't have to use iCloud.

How to sync just some of your Photos with iCloud

If you want to store your photos in the cloud via Photos iCloud Photo Library, we recommend that you remove duplicates and the worst images, especially if your library is on the large side.

You get 5GB of free storage and we doubt that your photo library is that small, so it is likely that you will be looking at buying more storage from Apple.

Only the default System Photo Library will sync with iCloud, so you can choose just to sync some of your photos to the cloud by limiting the image that appear in that library.

How to import new images to Photos for Mac

When you plug in your camera or memory stick you'll see an Import button, just like in iPhoto. If you have more than one device plugged in you will be able to choose which one to import from.

How to rank images

You can add images to Favourites, but you can't give them star ratings anymore. However, you can also add keywords to the image – including typing a star rating into the metadata if you are keen to maintain star ratings system used in iPhoto.

How to use Geotags

When you import image that have been geotagged those tags will be respected. In Photos they will appear in the image's Info window along with an accompanying map. It will still recognise geotags, however, it appears you can no longer manually assign geotags to images.

Will AppleScripts still work?

You will be able to use scripts with Photos, but the scripting dictionary isn't quite as robust as iPhotos, and many iPhoto scripts will not work. There appears to be no support for Photos in Automator (but that may change).

Will there be Photos plug-ins?

Apple has said that Photos will be open to third-party extensions, but as yet we have seen none. We hope that some third parties will be able to address the lack of professional features in Photos for Mac.

Will Photos for Mac recall faces you have previously identified?

Faces metadata will also transfer over from iPhoto. When you import your Aperture (and iPhoto) library Photos will also import your face identification information and you will be able to select Faces and see the faces you have already tagged.

Can you still use iPhoto?

If you like, you can still launch iPhoto and work with your images there – with the understanding that any edits you apply will appear only within the app you used to apply them.





Office for Mac 2016 preview

Karen Haslam reveals everything we know about the new version of Office for Mac

Will my Mac run the Office for Mac 2016 preview?

If your Mac runs Yosemite, then you'll be able to use the new suite. Apple's latest OS is available on the following:

- iMac (mid-2007 or newer)
- MacBook (late 2008 aluminium or early 2009 or newer)
- MacBook Pro (mid/late 2007 or newer)
- MacBook Air (late 2008 or newer)
- Mac mini (early 2009 or newer)
- Mac Pro (early 2008 or newer)
- Xserve (early 2009)

How can I get the Microsoft Office 2016 for Mac preview?

First, you'll need to go to Microsoft's Office for Mac Preview site (tinyurl.com/jw59utq).

Click *Download Now*. The download will take around 20 minutes. Once it's finished you'll find *OfficePreview.pkg* in your Downloads folder. Copy this to your desktop. Click on the package and follow the installation prompts, then agree to the software licence agreement. You'll need to close any Office applications you have open. Installation will take around one minute. Close the installer window once the install is complete. You'll find the relevant applications in the Applications folder – they won't be inside a Office folder like the Microsoft Office 2011 apps, they will be loose in the Applications folder.

Remember this is a Preview – in other words, 'Beta'. Microsoft says: "Some

features aren't final or may not work. We recommend that you always download and run the latest update, so that you are using the most up-to-date features."

When will the full version launch?

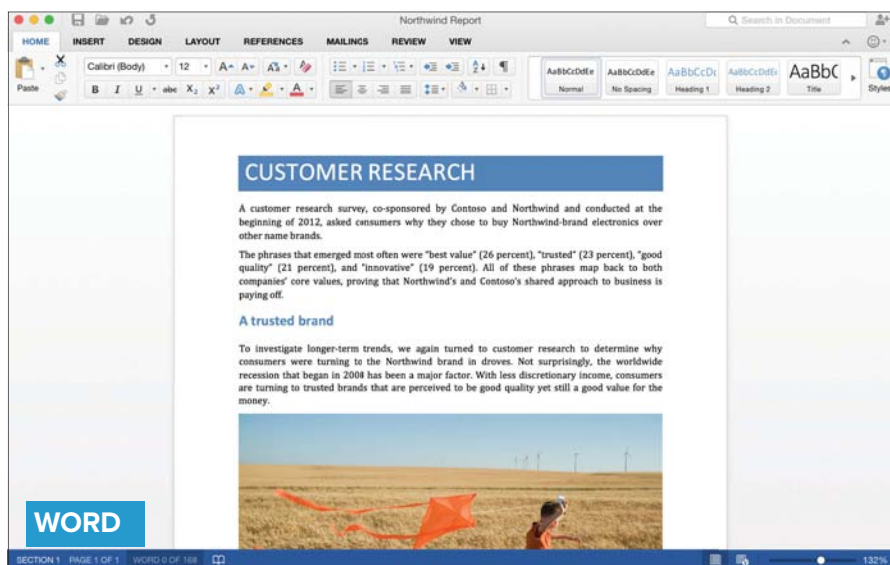
We think it will arrive close to Apple's WWDC 2015 event in June. Microsoft has recently launched iOS versions of Word, Excel, PowerPoint and Outlook.

How much will Office 2016 cost?

The Preview is free, but when the suite ships later this year it will require an Office 365 subscription or the purchase of a standalone copy.

The price of a non-subscription edition is still to be confirmed, though, we expect that the UK pricing will be similar to what it is now. Currently, Office for Mac Home and Business 2011 (Word, PowerPoint, Excel and Outlook) costs £220, while the Home and Student 2011 version (Word, PowerPoint and Excel) retails for £110.

Microsoft says you can use the preview builds at the same time as the 2011 edition. We have been doing so and haven't encountered any issues



When the software does launch users with Office 365 subscriptions will get the new apps immediately.

How much does an Office 365 subscription cost?

For business users there are a number of different packages:

Small Business £3.30 per month (£39.60 for the year).

Small Business Premium £8.40 per month (£100.80 per year).

Mid-size Business £9.80 per month.

There are also enterprise offerings for £2.60, £5.20 and £15 per month.

Home Premium £7.99 per month or £79.99 for the year.

How long will the Office 2016 for Mac Preview be available?

Microsoft says that each build of the preview will expire after 60 days, and that new builds will come regularly. The final build will stop working a month after the software launches.

How can I uninstall the Office 2016 for Mac preview?

If you try the preview and decided that it's not for you, you can remove it from your Mac. To do so, open a Finder window and select the *Applications* folder. Navigate to the Word, Excel, PowerPoint, Outlook or OneNote app you want to delete. Drag the relevant app to your trash, then empty the trash by right-clicking the Trash icon.

Can I use the Microsoft Office 2016 for Mac preview alongside Office for Mac 2011?

Microsoft says that you can use the preview builds at the same time as the 2011 edition. We have been doing so and haven't encountered any issues.

Be aware that with multiple versions of the Office apps on your Mac, you may inadvertently trigger the wrong Office app to open when you intend a different one.

Why did Microsoft release a preview of Office for Mac 2016?

Microsoft is using the preview to gather feedback from users via the 'Help improve Office' button. A Microsoft rep told our US colleagues at Macworld.com

that the aim of this feature is to help eliminate a public perception that such feedback is ignored, by proactively responding to reported issues. This feature won't be available when the suite launches, though.

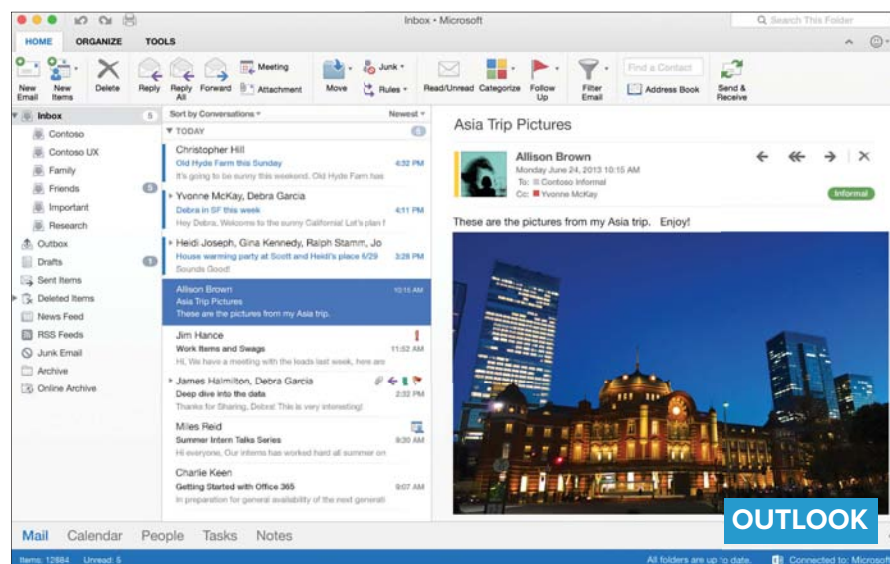
Microsoft Office 2016 interface

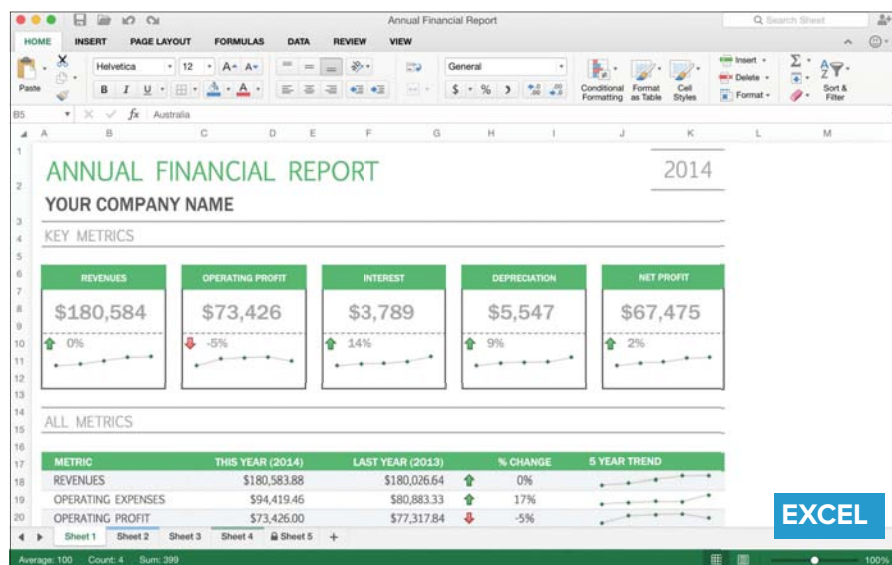
Every application gets an OS X look and feel, and apps are optimised to work with the Retina display. Office will also offer the Yosemite full-screen mode. The only Yosemite features you don't get are auto-save and renaming, moving, tagging, or locking documents using the document title bar.

Microsoft says that the new apps are designed to give users a similar experience on all devices, so if you are using the Office apps on Windows, Mac, iOS or the web (or Android) you will use them in the same way.

So that this unified interface is possible, Microsoft has updated the Ribbon – its toolbar that runs across each document, so that it is similar to the Office for Windows 2013 version. If you are working on a smaller screen, you are now able to hide the Ribbon, which increases the screen space available for editing your document or spreadsheet.

There is also a refreshed task pane interface, which Microsoft claims: "Makes positioning, resizing, or rotating graphics easy, so you can create exactly the layout you want."





Word 2016 preview

Microsoft describes the new program as having state-of-the-art editing, reviewing and sharing tools. The company also notes that the new design tab provides quick access to features such as layout, colours and fonts, and the new Format Object task pane gives you complete control over pictures, shapes, and effects.

There are also new collaboration features. Several people, for example, can work on the same document at the same time, thanks to the new Co-authoring feature. It appears that at least 10 people can be involved in editing a document at the same time. When you are editing a document, you'll be able to see the names of the other people who are working on the document at the same time, and view their changes as they make them.

To keep the document in sync Microsoft is using a technology called cobalt synching. This studies the changes that are being made and if two people change the same thing at the same time, it will alert users to the conflict.

Another collaboration-themed addition is Threaded Comments, which is a little like website comments, allowing users to

add comments that can be viewed by the editors of a document.

There is also a new document navigation pane that makes it easier to navigate through a document. Plus, there's a Style pane so it's easy to change the styles being used in the document.

Excel 2016 preview

Excel will now support the majority of the Windows version's keyboard shortcuts in addition to Mac keyboard commands. That basically means that Ctrl-C will copy and Ctrl-V will paste, as well as ⌘-V. It will also offer more advanced analysis tools – the new Analysis ToolPak – which will offer advanced statistical functions, including moving averages and exponential smoothing slicers for pivot tables, as well as auto-complete features for inserting functions and filling in cell data.

PowerPoint 2016 preview

PowerPoint also comes with Word's collaboration and Threaded Comments features. In addition, it gains a redesigned Presenter View that allows users to easily switch a presentation from one display to another. Microsoft

says the new view will become the “mission control for your presentation – displaying the current slide, the next slide, notes and a timer on your Mac, while projecting only the presentation to your audience on the big screen”.

It also offers a customizable presenter window where users can view notes, the next slide, and where they are in the current sequence of slides.

There are also new slide transitions and an improved animation task pane that Microsoft says will help you build your presentation faster.

OneNote 2016 preview

OneNote is Microsoft's ‘digital notebook’ and it is available for free on the App Store. It appears that there is little new in the preview version, although OneNote can now provide optical character recognition (OCR) for documents added to the cloud.

Outlook 2016 preview

The new version of Outlook for Mac has been available since last autumn, but only to those with an Office 365 subscription.

When that app launched Microsoft said it offered: “Better performance and reliability as a result of a new threading model and database improvements; a new modern user interface with improved scrolling and agility when switching between Ribbon tabs; online archive support for searching Exchange archived mail; Master Category List support and enhancements delivering access to category lists and sync between Mac, Windows and OWA clients; Office 365 push email support for real-time email delivery; and faster first-run and email download experience with improved Exchange Web Services syncing.”

Now it gains an improved conversation view that organises the inbox around threaded conversations, and a message preview that gives you the first sentence of an email just below the subject line. There's also a new side-by-side calendar view that lets you look at two different calendars together. You can even drop one calendar on top of the other, so you can see if there are overlapping events.

PowerPoint gains a redesigned Presenter View that allows users to easily switch a presentation from one display to another

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SOLID-STATE DRIVES

Andrew Harrison puts six of the latest models through their paces

Almost all Macs now run on flash storage inside as standard. The benefits are clear – incredibly speedy operation, shockproof, silent, and tiny in size. There's been a trade off though, as our internal storage allowances have been cut, unless we pay a premium for an upgrade at time of purchase.

Off-loading your data storage to a portable drive makes sense, if only for safety backups of the internal drive. But while flash drives can outrun almost any hard-disk system they are still priced at a premium, so it's important not to waste money on a poor decision.

When it comes to portable external storage, Mac users have the widest

choices available. First there are all the USB drives in the world, now operating at decent speeds with the help of USB 3.0. And then there are all those new drives that include Thunderbolt in either of its guises: original and Thunderbolt 2.

And you need a fast interface to get the best out of the high-speed storage technology inside. Flash drives, otherwise known as solid-state drives, operate orders of magnitude faster than our old hard-disk technology. The challenge is getting that data in and out. Thankfully, either USB 3.0 or Thunderbolt is relatively fast, and will let you see some of the real speed that a flash drive can offer.

We look at six of the latest portable flash drives, some with USB 3.0, some

with Thunderbolt, and some even with both interfaces. As tested, they range in price from £79 to £849, although it pays to look at the price per gigabyte figure to get a good idea of their real value.

If you're looking for best performance, the sad fact is that today's USB 3.0 and its '5Gb/s' speed beats Thunderbolt's '10Gb/s'. And note that no portable drives are currently using Thunderbolt 2 and its 20Gb/s offering, since supporting silicon chips cannot reach the original Thunderbolt specification if they are to be powered from the cable bus as we do with USB and FireWire portable drives. Expect to see top speeds of around 440MB/s for USB 3.0 drives and 390MB/s for Thunderbolt drives.



BUFFALO MINISTATION THUNDERBOLT

£295 inc VAT • buffalo-technology.com/en



Buffalo Technology's MiniStation Thunderbolt joins a shortlist of portable flash drives that accommodate both Thunderbolt and USB 3.0 connections. That adds welcome versatility, enabling connection to Windows PCs with their '5Gb/s' USB 3.0 ports, while Mac users can take advantage of the fastest desktop data bus in the business from '10Gb/s' Thunderbolt.

It weighs a little under 250g and is sized to accommodate an internal 2.5in SATA SSD. The result is not tiny at 130x81mm, and 24mm thick, but somehow its soft rounded bottom stamped from thin aluminium sheet, and frosted white plastic top, combine to make it rather preternaturally tactile.

Inside our sample was a 256GB Crucial M4 SSD, the largest capacity offered by Buffalo; a 128GB version is also available.

Tested first over USB 3.0, the Buffalo averaged sequential reads at 401MB/s and provided write speeds far behind at just 258MB/s. While these speeds far exceed laptop disk drives they're also among the slowest we've measured for this capacity of portable flash drive. Turning to small-file transfer speeds from the Buffalo, data up to 1024kB averaged 155MB/s for random reads but just 66MB/s random writes.

Connected via Thunderbolt, the Buffalo drive's speed dropped to just 391MB/s sequential reads and the same 258MB/s sequential writes as USB 3.0. The small-file test reported random reads down at 146MB/s, and again 66MB/s for random writes.

The real flaw that still underlies Thunderbolt portable drives is underspecified supporting electronics, since power consumption available through the Thunderbolt bus is limited to less than that required with today's electronic components. This results in transfer speeds of portable Thunderbolt devices that lag behind the nominally slower USB 3.0 protocol.

Macworld's buying advice

The Buffalo's looks and tactility will recommend it to anyone taken by its neat form, but faster and cheaper USB 3.0-only portable drives offer better value.



FREECOM MSSD

£79 inc VAT • freecom.com



The Freecom mSSD is a very lightweight portable drive weighing just 28g and measuring 78x35mm and only 8.5mm thick. It has a metal case made from stamped aluminium with a brushed finish. The company name is printed on the top surface, and the capacity marked on one edge.

Despite the metal outer, the mSSD does feel rather flimsy and ephemeral. There's no easy way to take it to bits either, as it appears to have been stamped together. And due to its very low weight, a kink in the supplied USB cable is enough to prevent it from sitting flat on a desk.

The drive arrives packaged in a neat cardboard presentation box with magnet-sealed lid, and inside is just the mSSD drive and a 29cm length of light-grey USB 3.0 cable. There is no protective carry case included, which is disappointing, especially since its sharp edges created scratches on other plastic items in our laptop bag's pocket.

We tested the 128GB version, and it's also available with 256GB capacity. In sequential read speeds, the mSSD was found to measure at the limit of what's now possible from USB 3.0 drives, although its sequential write performance was much lower. In this case that's probably because 128GB SSDs have slower write speed due to reduced parallelism compared to 256+GB solid-state drives.

Tested with 2- to 10MB files it averaged 439MB/s sequential reads and 148MB/s sequential writes. Small-file performance was good, if rather slower than the leading flash drives in this category. Random reads from 4- to 1024kB averaged 152MB/s while random writes averaged just 89MB/s.

Macworld's buying advice

At around 62p per gigabyte, the mSSD is a relatively inexpensive portable flash drive. It's as quick as any other USB 3.0 flash drive when reading large files, but the 128GB option proved much slower at file writing. Nevertheless as a compact storage device, it will serve better than a regular USB thumbdrive.



MONSTER DIGITAL OVERDRIVE THUNDERBOLT

£849 inc VAT • monsterdigital.com



The OverDrive Thunderbolt is a pocket flash drive based around a 2.5in SATA SSD. Inside, the OverDrive Thunderbolt is based around a Crucial M500 SSD, customised by Monster by removing its outer SATA drive casework to reduce some bulk.

The SSD is mounted in a plastic frame alongside a circuit board with Thunderbolt controller electronics, then sandwiched between two thin sheets of pressed steel which form the outer casework. These are glued in place with strong 3M adhesive.

A tethered Thunderbolt cable can wrap around the case when the drive is stowed, with a spring-loaded catch to park the Thunderbolt plug and keep the cable in place. Unrolled, there's 25cm of cable length available. The entire storage drive measures 132x80x15.5mm and weighs 202g.

The first sample of the drive returned unusually slow speeds in our standard benchmark tests, around 255MB/s reads and 235MB/s writes. After discussing the issue with Monster Digital's CTO, it was believed that we had been sent an early pre-production unit, so a final production sample was sent over.

In the very first test this new drive performed better, delivering up to 458MB/s reads and 359MB/s writes. That's still well short of the promised 500/450MB/s speeds but an important step that seemed to break through the single-lane PCIe speed barrier.

Unfortunately, even this level of performance was not to last, and after a few days use the unit had fallen back to the same restricted speed problem as the first sample.

Our final benchmark tests report the replacement Monster Digital OverDrive Thunderbolt drive as having sequential speeds peaking at 256MB/s reads, and 237MB/s sequential writes.

Small-file transfers were down at 129- and 130MB/s respectively, for random reads and writes, averaged with data sized from 4- to 1024kB.

Macworld's buying advice

Monster Digital's SSD delivered the slowest speeds we've encountered of any portable Thunderbolt flash drive.



SAMSUNG T1

£457 inc VAT • samsung.com/uk



The Samsung Portable SSD T1 is the company's first product in this emerging category – a portable storage drive little bigger than the mSATA card inside, and now with capacity to rival traditional laptop hard disks.

Many consumer gadget fans extol and elevate the virtue of being light in weight and possessing vanishingly small dimensions. And by that measure the Samsung T1 is a winner, measuring just 71x53mm, and 9.5mm thick. It's incredibly light too at just 26g. Adding its stubby little flat-ribbon USB 3.0 cable brings the net weight up to 38g, making a data dongle so light it can hang in the air off any USB port – the drive being supported in mid-air thanks its flimsy construction and the stiff cable.

The software demands on the Mac side that you install an additional kernel extension to complete the unlock stage. This SCSI ATA Translation (SAT) SMART extension, despite the name, does not ultimately provide any readable SMART data for Samsung's software. It really does look like an unnecessary hoop you must jump through, and an annoying extra kernel extension left widowed in the computer's file system.

The Samsung Portable SSD.app software provides but one function, to access the drive's AES 256 encryption. Once the T1 drive has been set up, it does not require any proprietary software to access the data.

Using QuickBench, we saw maximum sequential transfers of 438MB/s (reads) and 390MB/s (writes). Turning to smaller file speeds, 4kB reads and writes measured 20.1- and 30MB/s respectively. And the average across incrementally larger sizes from 4- to 1024kB was 197MB/s for random reads, and 209MB/s for random writes. These are the fastest results we've measured for an external flash drive.

Macworld's buying advice

The Samsung Portable SSD T1 1TB is a fast and highly compact flash drive well suited to anyone that needs speedy storage without the noise and bulk of disk-based drives.



TRANSCEND ESD400

£420 inc VAT • uk.transcend-info.com



Keeping up to 1000GB of data close to you is now a doddle – provided you can afford the £400-plus asking price. Transcend Memory's ESD400 goes up to 1TB size, yet still takes up next to no space and weighs just 53g. But the price of this technology in your pocket is currently around £420 for this capacity.

For smaller budgets and demands, you can also find it in sizes down to 128 GB, which costs around £70.

A suedette slip-on cover is included, a useful addition since the soft glossy plastic top can be easily scratched just by carrying in a bag with loose objects.

Like Samsung's T1, which follows the ESD400 and similar mSATA-based pocket flash drives, the low mass plastic build actually makes the product too light to use confidently. Especially in this example where the cable weighs almost as much as the drive, and its intractable stiffness means the drive simply won't lie straight anywhere on the desk.

Get past this minor annoyance, and you have a very speedy piece of storage in the palm of your hand. And although expensive at 42p/GB, it's cheaper than the Samsung T1, and is easier to operate since the latter forces software installation just to use the drive the first time.

Like some other models in Transcend Memory's drive range, the ESD400 includes a One-Touch backup button. Here, it's so discreetly situated on one edge you could almost miss it. So if you have your own backup regime this superfluous addition shouldn't even get in your way.

We measured speeds up to 433MB/s in OS X using QuickBench. Sequential write speeds were somewhat lower, perhaps even lower than we now expect with flash technology, but still decent at 370MB/s

Macworld's buying advice

It's almost too light but the ESD400 is also, just, the cheapest mSATA flash portable drive we've seen. For keeping a 1000GB in a tiny and lightweight plastic widget, it comes recommended.



TRANSCEND STOREJET 500

£549 inc VAT • uk.transcend-info.com



Transcend Information has added a flash-based portable drive to its range of external Mac storage. The Transcend StoreJet 500 offers both Thunderbolt and USB 3.0 connectivity, all finished in a smart all-aluminium enclosure that perfectly matches the natural metal finish of the Apple MacBook. At 121x75mm, and 12.5mm thick, it fits neatly into the hand, helped by nicely rounded corners. It feels solid yet weighs only 134g without cables.

On the drive's top is a small LED which lights blue to show connection, and blinks rapidly during transfers. And on the back edge are the two ports, Micro-USB 3.0 and Thunderbolt.

Using the Thunderbolt connection, the StoreJet 500 was capable of 391MB/s reads and 291MB/s writes in large file sequential transfers. Those are speedy figures compared to hard disk drives that peak at around 100- to 120MB/s, but it also makes this Thunderbolt SSD much slower than the 500+MB/s that modern SATA Revision 3 solid-state drives deliver.

Small file reading and writing performance was good, with the average across 4- to 1024kB files amounting to 134MB/s random reads and 203MB/s random writes.

Turning to the USB 3.0 connection, the StoreJet 500 was capable of 437MB/s sequential reads and 297MB/s sequential writes. The read figure at least is on the edge of what is currently possible with USB 3.0 drives that are now employing the UASP protocol to overcome other limitations in USB 3.0 storage standard. But we would also expect to see sequential write speed closer to 400MB/s than 300MB/s.

Small-file transfers were at a similar level over USB 3.0 as they were with Thunderbolt; giving slightly faster than average for small random reads (144MB/s), and slightly slower than average for random writes (188MB/s).

Macworld's buying advice

Like other dual-connection flash drives before it, you're better off sticking to USB 3.0, making the price premium demanded by such Thunderbolt SSDs a poor investment.

Conclusion

With a single tethered Thunderbolt cable to connect, the Monster OverDrive Thunderbolt is more limited in its connection options. While that may not matter to a Mac user who just needs the fastest drive, we found this to be one of the slowest. And at around 85p per GB, it's also one of the most expensive.

Priced even higher in storage-to-cost terms at 115p/GB, the Buffalo MiniStation Thunderbolt is at least dual-format with its interfaces. But it's also no racehorse in the speed stakes, with middling performance in part due to its use of an elderly Crucial SSD. Its soap-bar style is a different

matter, and we considered it one of the coolest looking drives so far.

Freecom's mSSD looks the part in its brushed metal case, although it feels more chintzy in the hand, made from cheap stamped sheet rather than a heavyweight casting. It was not especially quick by the standards of flash technology but can be bought for a more attractive £79 in the small capacity 128 GB model we tested.

Samsung's T1 has no problem with speed, red-lining at the limits of current USB 3.0 storage speed, and is a tidy if insubstantial feeling baby drive. The 1TB

model we tested is very expensive at £457 but returns better value at around 46p/GB, making it one of the best value drives overall in this capacity at least.

Transcend has two flash drives of interest, although the Mac-oriented one may be the poorer choice. The StoreJet 500 has build quality and substance but its slower Thunderbolt option adds needless cost. The more lightweight and plasticky ESD400 meanwhile has the best overall value, a wide range of capacities and performance that approaches the fast Samsung. It's for this reason that we gave it our Editors' Choice award.

	BUFFALO £295 inc VAT ★★★★☆	FREECOM £79 inc VAT ★★★★☆	MONSTER DIGITAL £849 inc VAT ★★★☆☆	
Product name	MiniStation Thunderbolt	mSSD	OverDrive Thunderbolt	
Capacity tested	256GB	128-, 256GB	960GB	
Capacities available	128-, 256GB	128GB	240-, 480-, 960GB	
Drive inside	Crucial SSD	N/S	Crucial M500 SSD	
Protective case	No	No	Yes	
Cable	490mm (TB), 560mm (USB)	290mm	250mm	
Dimensions	130x81x23.7mm	78x35x8.5mm	132x80x15.5mm	
Weight	247g	28g	N/S	
Weight with cable	273g	42g	202g	
Price per gigabyte	115p/GB	61.7p/GB	84.9p/GB	
OS X (USB 3.0)				
Sequential reads	401	439	N/A	
Sequential writes	258	148	N/A	
Random reads (avg 4- to 1024kB)	155	152	N/A	
Random writes (avg 4- to 1024kB)	66	89	N/A	
OS X (Thunderbolt)				
Sequential reads	391	N/A	254	
Sequential writes	258	N/A	234	
Random reads (avg 4- to 1024kB)	146	N/A	122	
Random writes (avg 4- to 1024kB)	66	N/A	127	

How we test

At *Macworld*, we independently lab test portable storage drives to gauge their data-transfer performance, using a variety of benchmark applications for OS X.

For this group test, we used Intech QuickBench for a comparable measure of large-file sequential speed testing. While this application lacks queue-depth, testing it can be useful to look at datarates for a sequence of random small files, sized between 4- and 1024kB. Many non-media user files will fall into this size bracket, making this test a good guide to everyday file transfer speed.



SAMSUNG £457 inc VAT ★★★★★	TRANSCEND £420 inc VAT ★★★★★ <div>Macworld EDITORS' CHOICE</div>	TRANSCEND £549 inc VAT ★★★★★
T1	ESD400	StoreJet 500
1000GB	1000GB	1000GB
250-, 500-, 1000GB	128-, 256-, 512-, 1000GB	256-, 512-, 1000GB
Samsung 580 EVO SSD	Transcend SSD	Transcend SSD
No	N/S	N/S
110mm	450mm	520mm (TB), 450mm (USB)
71x53x9.5mm	92x62x10.5mm	121x75x12.5mm
26g	53g	134g
38g	81g	158g
45.7p/GB	42p/GB	54.9p/GB
438	433	437
390	370	297
197	143	144
209	178	188
N/A	N/A	391
N/A	N/A	291
N/A	N/A	134
N/A	N/A	203

£569

Contact

■ apple.com/uk

Specifications

2.6GHz dual-core Intel Core i5 processor (Turbo Boost up to 3.1GHz) with 3MB on-chip shared L3 cache, configurable to 3GHz dual-core Intel Core i7 (Turbo Boost up to 3.5GHz) with 4MB on-chip shared L3 cache; 1TB (5400rpm) hard drive configurable to 1TB Fusion drive or 256GB of flash storage; 8GB of 1600MHz LPDDR3 memory configurable to 16GB; Intel Iris Graphics; 36x197x197mm; 1.2kg

Macworld



Apple Mac mini 2.6GHz (late 2014)

Apple refreshed its Mac mini range in October 2014, causing a stir in the process by releasing models that were slower than the previous 2012 generation that they replaced. That's what we found when comparing the best of 2012 with the best of today, with the shortfall in the latest Macs clearly a consequence of the removal of quad-core processor models from the range.

Members of the Mac mini appreciation society were also unhappy with Apple's decision to solder the memory to the logic board, thus removing the popular option of buying basic models then maxing out the RAM with upgrade kits from the likes of Crucial Memory - or even simply acquiring the Mac with the memory you required at that point, safe in the knowledge that it could be expanded in the future when and if software memory requirements demanded.

We did some sums in our first 2014 Mac mini review, and calculated that Apple's high tax on memory upgrades is not as steep as it once was. In the case of the move from 8GB to 16GB, as you may be tempted to do with the middle-order Mac in the three-model range reviewed here, going the Crucial route costs £98, while Apple charges £160.

So while that's £60 more than some people feel they should have to pay for the same end result, it's not the several hundred pound difference it used to be. And the fixed-memory policy should mean that RAM of guaranteed quality is being securely installed. It thereby reduces the time-consuming problem of tracking down bad RAM as a cause of system instability - even the big-name memory vendors have been known to suffer from occasional quality issues.

Positioning

The middle Mac mini costs £569 in standard trim, and sits neatly between the entry model at £399 and the top option at £799.

When we say 'top', though, that's just the best off-the-shelf version.

If you buy from the online Apple Store, as with any other Mac, you can select your own configuration with limited tweaks to the processor, storage and memory. The all-options-selected top Mac mini today would be one with a 3.0GHz Intel Core i7 dual-core processor, 16GB of memory and 1TB PCIe-attached flash drive, and would cost an eye-watering £1,759.

There's actually a smaller gap in price between the most basic Mac mini model and the middle than there is between the middle and top. You'll see this more easily if you round up the distracting 99s from the price tags for the three standard models: £400, £580 and £800.

So what is the difference between entry and middle Mac mini models? Looking at the specs alone, quite a lot. The entry model runs the same processor and memory as the cheapest MacBook Air, but with a slow 500GB hard disk instead of the fastest storage in consumer computers that is the PCIe-attached flash drive. The new entry-level Mac mini also runs the same processor and 500GB storage as the cheapest iMac, although this budget desktop computer is at least fitted with 8GB of memory.

Step forward the middle Mac mini. It enjoys a healthy cranking up of processor clock speed, from the 1.4GHz Intel Core i5-4260U dual-core processor to a 2.6GHz Intel Core i5-4278U. Most of Apple's consumer desktop range uses U-suffix Intel chips today, denoting ultra-low power consumption (by Intel standards), and designed with power economy in mind.

The middle Mac mini sees a doubling in storage capacity, from 500GB to 1TB, but keeps the same old hard-disk technology. This remains the weakest part of the Mac mini system, holding back

much potential, but unlike with the soldered memory issue, this one is at least fixable - as long as you're technically adept enough to strip down intricate computer hardware. We won't deny, though, that since Apple barricaded the way with security screws, it's not as easy as it used to be.

Memory has also doubled, from 4GB to 8GB. Compared to the last generation of Mac mini, it has evolved subtly from standard 1600MHz DDR3 SO-DIMM modules to a low-power variant (LPDDR3) that is notoriously and quite permanently soldered fast to the circuit board.

The final difference between the cheapest and middling Mac mini models is in the graphics processor specification. All Mac minis since the previous late 2012 generation have relied on the built-in graphics capability of the Intel Core series mobile chips, and here we see a change from Intel HD Graphics 5000 to Intel Iris Graphics 5100.

Given the impressive performance leap we found with the Intel Iris Pro graphics in the last 15in MacBook Pro with Retina display, you may be forgiven for expecting a substantial upgrade in graphics performance when selecting the middle Mac mini. Sadly while they both have the word 'Iris' in common, the graphics processor in the middle Mac is little better than the one in the entry-level. Let's take a closer look.

Graphics

When we tested the 1.4GHz model, we found it just about capable of playing some Windows games ported to OS X - provided you selected a low screen resolution and reduced quality settings.

For example, Batman: Arkham City could play with an average framerate of 31fps when set to





1280x720 pixels and medium render quality. The middle 2.6GHz model with its Iris Graphics could only lift this to just 33fps. Those are average framerates; but on both Macs, the game slowed to minima of around 15fps, which will be noticeable as occasional graphical stuttering. In other words, we wouldn't recommend either Mac mini for this game at least.

It was a similar story when we ran Tomb Raider 2013 on both Mac minis, but with a slightly happier ending. The basic Mac mini averaged 35fps at 1280x720 and low quality (Legacy OpenGL mode), but never dipped below 23fps, which is closer to the 25fps threshold usually considered a workable minimum.

The middle Mac mini in the same game and settings recorded 36fps

average but a minimum framerate of 27fps. While this Mac is still borderline, it may tip the balance toward some occasional gameplay.

Processor and memory

If not the graphics, then perhaps the processor upgrade may hold some useful extra power for those that need it. But despite the near doubling in processor clock frequency, you shouldn't expect twice the performance from the middle Mac mini.

In Geekbench 3, the processor and memory test app gave the cheapest 1.4GHz model an average rating of 2803 points in single-core mode, and 5401 points in multicore.

This 2.6GHz Mac mini here scored 3184 points in single and 6793 points in multicore mode.

That's a useful boost in raw speed, and not insignificant: we're looking at almost 14 percent faster for one core but closer to 26 percent with four virtually hyperthreaded cores working away.

As a digression, it's worth remembering that the Primate Labs Geekbench 3 benchmark test was calibrated with an Apple Mac mini back in 2011. The model used was also the middle of three ('better' in the marketing hierarchy of good/better/best), with 2.5GHz Intel Core i5-2520M processor and 4GB of 1333MHz DDR3 memory.

This sets a useful comparison, given that that model and the middle mini we're testing here have almost the same clock frequency (2.5 vs 2.6GHz) and the same configuration of two physical cores





with hyperthreading technology to approximate four cores.

That bench-reference Mac mini of 2011 was normalised to score 2500 points in single-core mode, and it then scored 5740 points running in multicore mode. So comparing the middle models of 2011 and 2014, we can calculate a percentage increase in raw processing power of 27 percent and 18 percent for each mode of operation, when assessing core processor and memory performance at least.

Given the advances in performance-per-clock, with the seemingly backward but surprisingly capable 1.4GHz Intel Core i5-4260U as exemplar, we were surprised not to find a clearer gap between the 2011 and 2014 mid-range Mac minis, especially given the minor clock advantage of the later 2.6GHz Mac.

Turning to the Cinebench tests of processor performance, there were similar gains between the entry-level 1.4GHz and middle 2.6GHz Mac mini models of 2014. In Cinebench 11.5, scores moved from 1.1 points to 1.3 points, an 18 percent improvement. In multicore mode, the scores increased from 2.49 to 3.13 points, or a 26 percent increase.

In Cinebench 15, the scores went from 97 to 112 points with one core, and from 236 to 274 points with both cores. This indicates a less convincing advantage of 15 and 16 percent faster performance for the middle Mac mini.

Power consumption

The peak power consumption of the 2.6GHz Mac mini (late 2014) was around 30 percent higher than that of the 1.4GHz model (52W vs 40W). But to be clear, this is running at top speed with both CPU and GPU pushed to maximum.

When sat idling at the desktop, both Mac mini models drew just 5W of mains power, making it by a considerable margin the most economical x86-based computer we have ever tested.

Against the best...

We didn't test the £1,759 configured Mac mini listed earlier, but how does the 2.6GHz Mac mini in the middle stand against the best Mac mini of 2014 with its 2.8GHz processor?

The top model has a slightly faster main processor, by 200MHz. It also incorporates increased Turbo Boost Technology headroom by

the same amount, moving from 3.1GHz to 3.3GHz. And there is also a hybrid storage system on the best Mac mini, supplementing the 1TB notebook hard disk with a 128GB PCIe-attached flash drive. This composite device is a Fusion Drive, which offers much of the speed advantage of solid-state storage, plus the mass storage capacity of cheap hard disks.

Looking at the CPU differences, the increase in benchmark scores was small but commensurate with the delta change of the processor clock frequencies. While the CPU is running around 6 to 8 percent faster, the scores similarly rose by around 6 to 7 percent.

So Cinebench single-core ratings went from 1.30 points to 1.38, and 112 points to 120; or 6.2 and 7.1 percent increases respectively. Multicore ratings changed from 3.13 points to 3.36, and 274 points to 292 - a 7.4 percent and 6.6 percent increase.

Geekbench 3 moved from 3184 to 3363 points (5.6 percent), and for multicore from 6793 points to 7208 points (6.1 percent).

Graphics performance between better and best Mac minis was near-negligible. They both feature the same Intel Iris Graphics 5100 engine, and in our tests the difference was no more than 1fps advantage to the faster Mac, and even that only in around half the tests.

Fusing the storage

For the user of the Mac mini, a far greater impression of speed on the best model will predominantly be due to the use of fast flash storage. Performance of the PCIe-attached Fusion Drive is tricky to benchmark due to the complex way it is knitted to the larger hard disk by OS X's Core Storage technology. But we can give a flavour of the speed you can expect, from a benchmark test of a solitary 256GB PCIe-attached flash drive found in the MacBook Air (early 2014).

The top sequential read and write speeds of this SSD were around 730Mb/s read, and 620Mb/s write. Compare those top speeds with the 104- and 103Mb/s results of the Mac mini's hard disk.

Clearly, this is not a directly comparable test, not least because a

128GB SSD is likely to have reduced peak write-speed performance than a 256GB sample due to reduced internal parallelism.

More important to the overall user experience is the small-file transfer performance. The hard disk averaged 16- and 18Mb/s for random reads and writes respectively, using data sized from 4- to 1024kB. Our SSD returned results in the same test of 172- and 273Mb/s - that's greater than an order of magnitude of difference.

Not measured here but nevertheless a crucial difference between the storage technologies is the ease with which a flash drive can swiftly juggle stacked threads of data at the same time, while a hard disk is still caching and churning when it is presented with the same multiple streams of data simultaneously.

In practice the use of a flash drive simply means that apps launch much faster, files open and can be saved in next to no time, and when you're multitasking yourself on various projects on your Mac, it's unlikely to slow down randomly and present a colour wheel for a cursor.

Last comparison

Finally, how does today's middle-rank Mac mini compare to the last-generation middle Mac mini with 2.3GHz quad-core Intel Core i7 processor? On the whole, not well: it's slower, by as much as 50 percent.

In the Geekbench 3 test, the single-core result was 7 percent higher - but after that the numbers start to tumble. In the multicore test the 2014 model was 42



percent slower (6792 points versus 11,752 points).

With Cinebench 11.5, the new Mac mini was 1.5- and 50 percent slower in single and multicore modes. Using Cinebench 15, it was 2.6 and 50 percent slower in the same tests.

We don't have direct comparison figures for gaming tests, but we can compare the 2.6GHz quad-core Mac mini of 2012 with the 2.6GHz dual-core of 2014. Batman: Arkham City averaged 42fps (1280x720, medium) against 31fps for the new model; that's 26 percent slower than once was. And in Tomb Raider 2013, the older Mac played at 35fps against 36fps for the 2014 middle Mac mini.

Despite the mooted improvements to Intel's integrated graphics between the HD Graphics 4000 of 2012 and the Iris Graphics 5100 of today, there's little in it based on this simple comparison. Indeed, the older graphics trumped the new in one game test.

Macworld's buying advice

While the entry-level Mac mini (late 2014) is priced attractively at £399, it would benefit from a memory

upgrade at least to 8GB, especially since this upgrade will never be possible later. By then comparing this upgraded cheapest model at £479 to the middle model with the same memory complement, priced at £579, you need to decide if the extra £100 justifies an increase in available CPU performance. That difference is around 15- to 25 percent faster according to our benchmark results. Graphics performance is marginally better in the middle model, but perhaps not by as much as the sexy Intel Iris name would suggest. Neither Mac mini is what we'd call games-friendly.

Judged against the top Mac mini, the CPU of today's top 2.8GHz mini performs around 6- to 7 percent faster than this middle model - probably not perceptible in normal use. But the upgrade to Fusion Drive in this same model will be much more conspicuous, although that will mean a price hike of £230. You could customise a middle model with the same Fusion drive, and that will reduce the difference to £160; or put another way, a £70 saving over the best Mac mini with its 200MHz faster processor. In the

absence of the late, lamented quad-core Mac mini, that would be the nearest thing to our value choice for a new Mac mini. **Andrew Harrison**



£1,049

Contact

■ apple.com/uk

Specifications

1.1GHz dual-core Intel Core M processor; 4MB shared L3 cache; 8GB of 1600MHz LPDDR3 onboard memory; 12in LED-backlit (2304x1440) Retina display; 256GB PCIe-based onboard flash; Intel HD Graphics 5300; 802.11ac; IEEE 802.11a/b/g/n; Bluetooth 4.0; 13x280x196mm; 920g

Macworld

PREVIEW

Apple MacBook 2015

The MacBook – and that's the MacBook rather than MacBook Air or MacBook Pro – is a new line of notebooks for Apple's expanding range.

You'll immediately notice its bright, vivid and detailed Retina display. The 12in screen has a resolution of 2304x1440, which equates to 226ppi (the current Retina 13in MacBook Pro has a pixel density of 227ppi). Apple has reduced the size of the bezel around the screen too, bringing it much closer to the edge-to-edge design we'd love to see.

Pop into an Apple Store to take a look and you'll spot something else new. Not only does the MacBook come in silver, it is also available in the iPhone and iPad's space grey and gold hues.

Pick up the MacBook and you'll be amazed by how thin and light it is. It weighs just 920g, and measures just 13mm thick.

The thin, light design doesn't sacrifice keyboard real estate, though. Apple has kept the full-size keyboard with a few tweaks. The keys are now slightly bigger than those on current Mac laptops, which makes

them slightly closer together. More importantly, Apple has changed the keys' scissor-switch mechanism to a butterfly. Now, the keys go straight up and down rather than lean.

It does away with that cramped finger feel you can get with an iPad-sized keyboard. And each key now boasts its own LED light, so they all have the same brightness level.

Sadly, the Apple logo on the back of the MacBook doesn't get an LED at all, so it's goodbye to the much loved glowing Apple.

Apple has also made some big and pretty cool changes to the trackpad. The force-enabled device measures how much pressure you're applying and introduces a raft of new ways for interacting with the MacBook. Force-click on an address,

for example, and it will automatically launch the Maps app. You can force-click on a Mail attachment to quick-look at it, on a date and time to create a new Calendar event, or even on a word to find out what it means. It can be faster than right-clicking and digging through contextual menus. Apple has also taken away the hinge traditionally found beneath the trackpad, so it feels the same wherever you click.

Another big talking point about this new MacBook is its ports. There

cheap. Apple says a DisplayPort adapter is coming soon.

Having that single USB port has allowed Apple to make this MacBook incredibly slim, but just how portable is it if you're required to carry adapters too, which you're likely to forget and leave behind? Still, we all freaked out when the MacBook Air launched without an optical drive but everyone is over that now.

Apple isn't worried. The MacBook, it says, is designed to fly solo, unencumbered by wires.

It is possibly best suited to people who want the lightest machine possible, and can use wireless connections such as AirPlay, AirDrop, Bluetooth and Wi-Fi.

We haven't yet had a chance to put the MacBook 2015 through our speed tests, but we do know that inside the notebook is Intel's new energy-efficient Core M 'Broadwell' processors, housed in a logic board that is 67 per cent smaller than Apple's previous record. The base model runs at 1.1GHz and can Turbo Boost to 2.4GHz.

The other thing we've yet to test is battery life, although the battery is

claimed to be one of

the MacBook's standout features. Apple describes it as all-day battery life; what that really means is nine hours of web surfing or 10 hours of watching video.

The MacBook 2015 will be available from 10 April, with a starting price of £1,049.

Macworld's buying advice

We can't give our full verdict until we've spent more time with the MacBook 2015 and carried out all of our benchmark testing, but first impressions are positive. For design, portability and display quality, the MacBook 2015 ticks all the right boxes, although issues could arise from its power and lack of ports. **Ashleigh Allsopp**



£849 inc VAT

Contact

apple.com/uk

Specifications

1.6GHz dual-core Intel Core i5 processor with 3MB shared L3 cache; 4GB of 1600MHz LPDDR3 RAM; 128GB PCIe-based flash storage; 13.3in, 1440x900 display; Intel HD Graphics 6000; 802.11ac Wi-Fi (802.11a/b/g/n); Bluetooth 4.0; 2 x USB 3 ports, 1 x Thunderbolt 2, 1 x SDXC card slot, 1 x 3.5mm headphone jack; 54Wh battery claimed to give up to 12 hours wireless web browsing; 17x325x227mm; 1.35kg

Macworld

PREVIEW

MacBook Air 13in (2015)

The MacBook line of Apple laptops has been comprehensively updated.

As well as the entirely new super-slim 12in MacBook, there have been significant upgrades to the 13in MacBook Pro (the 15in Pro remains unchanged) and both the 11in and 13in MacBook Airs. Here we look at the 13in MacBook Air.

Let's start with what has stayed the same. First up, design. It would be easy to dismiss the MacBook Air update because of lack of change in this most visible of departments. The 2015 Air has the same chassis as the previous generation, with the same extremely high build quality and the same stunning looks.

The Air doesn't even get the one physical change we got in the updated 13in Pro, the force-touch haptic touchpad. The keyboard is unchanged too. Nor does the Air get the butterfly-mechanism keys that appear in the new 12in MacBook, although it's too early to say whether that's something to mourn or celebrate – some reviewers have complained that the keyboard's lack of tactile feedback makes it like using a touchscreen.

The Airs still aren't Retina-class: like the mid-2014 13in MacBook Air, the early-2015 version has a 13.3in (diagonal) LED-backlit glossy widescreen display with a resolution of 1440x900 pixels and a pixel density of roughly 128ppi.

That's pretty low on the sharpness scale by today's standards (for comparison, the 13in Retina MacBook Pro has a pixel density of 227ppi), and those who are used to Retina or better displays may find the Air a touch fuzzy, although it is by no means a bad screen. However, it's worth mentioning that colour gamut may be a weakness; our tests on last year's model measured just 63 percent of the sRGB colour gamut, and off-key screen colours were visible to the naked eye.

We think Apple will add a Retina display option to the Air line-up at some point, but the real changes to the 2015 Air are under the hood.

Its base spec incorporates two big improvements over the 2014



unit: the processor is now a 1.6GHz dual-core Intel Core i5 rather than a 1.4GHz version, and the graphics are Intel HD Graphics 6000 rather than Intel HD Graphics 5000. It also has a Thunderbolt 2 port rather than a Thunderbolt. It isn't apparent from the specs, but Apple says the flash storage is also up to twice as quick.

The upgrades here are less thrilling than those in the new 12in MacBook and the 13in MacBook Pro, but you can still expect improved performance (in areas where processing speed or graphical power are the limiting factor) and better future-proofing.

The improvement in the baseline speed of the processor from 1.4GHz to 1.6GHz is significant because processing power is more likely to become the performance bottleneck in lower-spec machines. Like the new Pro, the 2015 Air is equipped with Intel's new fifth-gen Broadwell chip, so it should be more power-efficient – although it's hard to get too excited about Apple keeping battery life at the same (admittedly excellent) level rather than improving it.

The 13in Air's performance should get a further boost from the new flash storage (the 11in Air misses out on this upgrade).

Finally, the stronger graphics setup should produce a better gaming machine – according to iFixit's calculations, around 20 to 25 percent better gaming performance than the Intel HD Graphics 5000.

The latest batch of MacBook Air laptops is already here, available to order from Apple and its resellers. We don't think availability is an issue: there have been no reports of stock shortages, although since the 13in Air is perhaps one of the least exciting of the new products, that's probably not a big surprise.

The 13in MacBook Air is available in two starting configurations that differ only in the amount of flash storage: with 128GB of the PCIe-based flash storage the Air costs £849, and with 256GB it costs £999. Further customisation options are also available.

Macworld's buying advice

There are a few solid upgrades here: performance should get a boost from the faster, more power-efficient Broadwell processor chips, graphics are improved and the flash storage is quicker too. And you get a further bump from Thunderbolt to Thunderbolt 2.

However, the MacBook Air misses out on the more arresting design updates seen on other MacBooks at Apple's March launch event (such as haptic touchpads, slimmed-down bodies). It's probably worth checking back for our verdict once we've spent some time with a review model and run our benchmark tests on it so we can comment on its real-world performance. We'll be able to give you a more definite opinion then on whether it's worth upgrading. **David Price**

£999 inc VAT**Contact**■ apple.com/uk**Specifications**

2.7GHz dual-core Intel Core i5 processor (Turbo Boost up to 3.1GHz) with 3MB shared L3 cache; 8GB of 1866MHz LPDDR3 onboard RAM; 128GB PCIe-based flash storage; Intel Iris Graphics 6100; 13.3in LED-backlit Retina display (2560x1600); 18x314x219mm; 1.58kg

Macworld**PREVIEW**

Apple MacBook Pro Retina 13in (2015)

The main reason why the updated 13in MacBook Pro hasn't had as much attention as the new 12in MacBook is its physical design. While the 12in MacBook has been radically designed, with the MagSafe power connector and almost all the other usual Mac laptop ports ditched to make it as slim as possible, the updated MacBook Pro looks pretty much the same as ever.

The sole physical difference between the new 13in Pro and the old one is the touchpad. Like the new superslim 12in MacBook, the 13in Pro gets Apple's force-click technology, which makes the touchpad sensitive to varying degrees of pressure; it can be set to respond to harder/deeper presses to activate different features. It also provides haptic feedback – a tangible, tactile response that in theory allows you to 'feel' what you are interacting with onscreen (rather than just the flat surface of the touchpad).

The screen on the 13in Retina MacBook Pro is unchanged too: it's still a 13.3in LED-backlit display with a Retina-class resolution of 2560x1600 pixels and a pixel density of 227ppi. Or you can plump for a 15in screen with a resolution of 2880x1800 at 220ppi; remember, though, that the 15in model is completely unchanged – the upgraded specs and new touchpad we discuss here apply to the 13in model only.

It's when you look inside the chassis and examine the tech specs that you find the substantive changes. The 13in Retina MacBook Pro now comes with a new set of processor chips, offering higher potential processing speeds and improved real-world performance.

The precise specs depend on which configuration you go for, and there are build-to-order options that allow great leeway in your options here. The 128GB of PCIe-based flash storage can be doubled to 256GB (a £200 option), or doubled again to 512GB and the Pro fitted with a

2.9GHz processor (Turbo Boostable to 3.3GHz) for a total price of £1,399.

On paper, the specs represent wide-ranging and significant upgrades to the previous generation of MacBook Pro.

The baseline speed of the processors is slightly up (the base configurations of the last-gen MacBook Pros were clocked at 2.4GHz and 2.6GHz at launch, given a bump to 2.6GHz and 2.8GHz last summer and have now been nudged upwards again to 2.7GHz and 2.9GHz), and these are Intel's new fifth-gen Broadwell chips, so they should be more power-efficient too.

Added to this, Apple says that the PCIe-based flash storage provided is up to twice as fast as the previous generation, with throughput increasing up to 1.6Gb/s.

And the graphics should be faster as well: the 2015 edition of the 13in MacBook Pro is equipped with an integrated Intel Iris Graphics 6100 chipset, whereas last year's model (like the 13in MacBook Pro from 2013) used the Intel Iris Graphics 5100.

Obviously these improvements need to be evaluated in the labs and over prolonged real-world testing, but it would be reasonable to expect noticeable performance improvements in general processing tasks and on games. Watch this space for benchmark speed scores once we've spent some quality time with the new machines.

One final improvement that's worth both a brief mention now and careful testing in the future is that Apple says it's managed to squeeze more battery life out of the new 13in MacBook Pro Retina. It claims a battery life of 10 hours of general use for

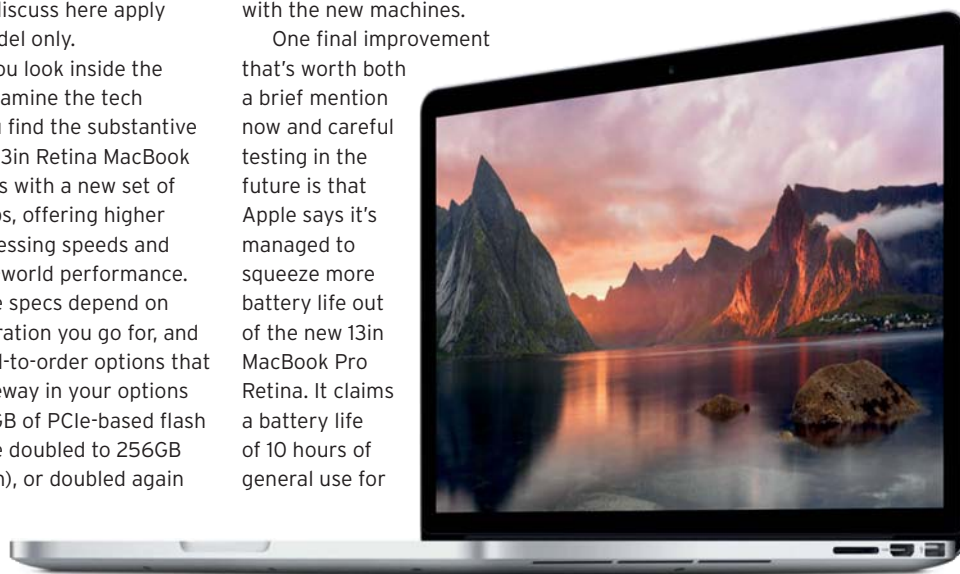
this model, and up to 12 hours for iTunes movie playback. The 2014 MacBook Pros had a claimed battery life of nine hours.

Interestingly enough, our battery tests last year were very positive indeed, and produced figures that were higher than Apple's claimed scores: we broke the 10-hour barrier with both the 2.6GHz and 2.8GHz models (10 hours 7 minutes and 10 hours 42 minutes respectively). We are optimistic that the new MacBook Pro will, like its predecessors, offer best-in-class battery life, but we will have to put in some lab time before offering our definitive verdict.

This new 13in Retina MacBook Pro is available now. You can select a configuration and order from Apple's website or visit an Apple Store or Apple reseller. Prices start at £999 but vary widely depending on the spec you go for. You can configure the flash storage up to a terabyte, for instance.

Macworld's buying advice

It may not be as glamorous as the new 12in MacBook, but we're optimistic about the quiet but significant updates in this MacBook Pro. The new chips and updated integrated graphics should improve performance and battery life, and we can't wait to try out the haptic touchpad. We'll post our findings once we've spent some time with a review model. **David Price**



From £299 inc VAT

Contact

■ apple.com/uk

Specifications

Apple Watch:

38mm or 42mm case;
316L stainless steel;
sapphire crystal; Retina
display; ceramic back;
composite back

Apple Watch Sport:

38mm or 42mm case;
7000 Series silver
aluminium; ion-x glass;
Retina display;
composite back

Apple Watch Edition:

38mm or 42mm case;
18-carat yellow gold;
sapphire crystal; Retina
display; ceramic back

Macworld

PREVIEW

Apple Watch

The Apple Watch is Apple's first new product category in five years. Will it be another iPod or iPhone? Will Apple now reinvent the computer wearables market, making it mainstream? Wearables are nothing new, but they are certainly an area ripe for innovation. Right now they are the domain of the geek and fitness fanatic – few other people buy them. Will Apple make wearables cool rather than geeky? It certainly looks like it's trying its best.

Size

There are two sizes of Apple Watch; I'm drawn to the 38mm version, which seems better suited to slender female wrists, while the 42mm is probably better suited to men. That's not to say that the guys can't wear the 38mm version, which, it turns out, costs £100 less than the 42mm Watch if you are opting for the Sport version; £40 less if you opt for the stainless steel Watch.

I was worried that even the 38mm version would be bulky on my wrist (which measures 150mm). But while Apple Watch is significantly larger than my current Rotary watch, it isn't too bulky and I reckon I could get used to it.

The other thing about the Apple Watch is how it fits so snugly – it doesn't curve round the wrist because the sensors have to touch the wrist if they are to work.

It's also heavier than my current watch, but again, I could probably get used to that. If you want the lightest watch going, the Sport versions are lighter than the other versions – aluminium being lighter than steel, and steel being lighter than gold.

The watchstrap you choose will also make a big difference, with some weighing considerably more than others. The plastic



Sport bands have different weights depending on the colour (I'm not sure why). The lightest watch combination of all is the 38mm Watch Sport with the black strap.

Build quality

Speaking of materials, there are three options: aluminium for the Watch Sport, stainless steel for the Watch, and 18-carat gold for the Watch Edition.

The Watch and Watch Edition also come with sapphire screens, the Sport with ion-x glass. According to Apple, all the screens will be durable,

and the material doesn't make a difference to their ability to withstand knocks. The Watch Sport's ion-x glass is lighter than the sapphire glass that is used in the other two versions.

Apple doesn't recommend dunking your Apple Watch in water. Although the Apple Watch is water-resistant to the requirements of the IPX7 standard, which should mean that it could survive in water up to one metre deep for up to 30 minutes, Apple describes the Watch as "splash and water resistant but not waterproof". So it's perfectly fine to use it in the shower as Apple CEO Tim Cook apparently does, but don't take it swimming.

While the plastic watch straps are fine for damp environments, the leather ones aren't waterproof.

Resolution

Screen resolution depends on which watch you choose. The resolution of the 38mm is



272x340, while the 42mm offers 312x390, according to Anandtech.

The photographs that I viewed on the Apple Watch screen looked great, with bright and colourful images. Admittedly, though, these were images that had been selected by Apple to show off the device.

Straps

There are 38 different combinations of watch and strap available. A few straps won't work with particular watches – the modern buckle isn't available for the 42mm versions and the leather loop isn't available for the 38mm type, for example. This may seem strange – and some have suggested it is typical of how Apple operates, controlling the options that will look the best – but the likely explanation is simply that some straps just won't fit the other watch types.

There are a various sizes of the different watchstraps that should fit wrists of any circumference from 125mm to 210mm. There is nothing to stop you buying additional watchstraps – they're all available at different prices from Apple's site. You might want to be careful about how you pair them, though – you may find that the aluminium Watch Sport clashes with the stainless steel watchstraps.

Interface

Of course, whichever Watch you choose won't make any difference to the way the smartwatch functions. The material each is made of might be different, but the specs and the software, and the way you use it will all be exactly the same.

The Apple Watch runs a scaled-down version of iOS, but it's not iOS as we know it, so you will have to learn what all the icons mean and how things work. Once you get the hang of it, the Apple Watch apps, along with the glances and notifications, are easy to use.

However, getting to that point can be rather confusing. There are



so many ways in which you can interact with the Apple Watch that it's not always clear whether you should tap, scroll, swipe or push at a particular point.

Nearly every preview of the Apple Watch complains that the interface isn't intuitive and that there are so many different ways to do things that it's simply not clear which should be used.

Sometimes you drag the screen around with your finger, other times you tap an icon or on-screen button, or press the screen a bit harder to see new options, and then there are occasions when you use the digital crown. I'll look at each of these elements below.

Screen

One way to use the Watch is via the screen. You can scroll around the screen, tap on items to select them or press harder to get more options – it's pretty much like right-clicking with a mouse. Various gestures will bring up other elements of the operating system. For example, swiping upwards on the Watch face accesses glances.

There's also Apple's force-touch technology, which determines how hard you are pressing the Watch and acts accordingly. There is a difference between a hard press and a simple tap, and force-touch knows it.

While scrolling is smooth and the touchscreen responsive, there are so many swipes, presses and taps to do things that it can be a bit complicated and will take some getting used to.

There is also an issue for those with thicker fingers not being able to select the tiny app bubbles on the home screen.

If you do find you have problems, then the best approach is to nudge the icon of the app you want to open toward the centre of the watch face, where it will increase in size so that you can tap it more easily. Alternatively, you should be able to scroll through, using two fingers to pinch and zoom to get in closer. You can also use the digital crown – more on that below.





The digital crown

The digital crown lets you navigate around the Watch without covering the screen with your finger. Tapping or rotating the digital crown will move you through the interface.

Tapping the digital crown takes you to the home screen where you can see all your apps. You can also use it to zoom in and out of photos and maps, and scroll through lists.

The button below

There's another button just below the digital crown. It doesn't seem to have a name, but I'm inclined to go cheesy and call it the friendship button. Pressing it takes you to the contacts screen, where you can place a call or send a text.

But it also opens up a number of new ways of communicating, because in addition to the above you can 'tap' the wrist of your friend or even send your heartbeat. To send your heartbeat, hold two fingers to the screen. You can also trade doodles: just draw on the face of your Apple Watch with your finger; it's like Draw Something, which was all the rage a few summers ago. As you draw, the lines will thin themselves out, and when you are ready the doodle will appear on your friend's device.

Taptic feedback

The heartbeat sent by your significant other, or just an angry colleague, is delivered to your wrist via Apple's taptic engine; it produces haptic feedback, which feels like a tap on the wrist. These taps will also alert you when notifications arrive; if you are following directions, the tap will effectively tell you whether to turn right or left.

It sounds a little like telepathy and I can imagine a future where we have all learned a variant of Morse code and are communicating with friends via taps on the wrist: one tap for yes, two for no.

These taps are difficult to ignore and there are different variations of vibration that are easily distinguishable. It will probably take a bit of getting used to, with a few people jumping out of their chair in meetings because they have just received an alert. Still, it's got to be preferable to having your iPhone buzzing away in your bag.

Siri

There's yet another way of entering information into the Apple Watch - Siri, Apple's personal assistant, which arrived with the iPhone 4s. Four years on and Siri has improved, although I don't find myself using it

much (only to set timers). However, Siri may really come into its own with the Apple Watch.

The initial testing of the Apple Watch took place in a busy room and the general consensus appears to be that Siri worked well despite the noise. You can use Siri to search, set reminders or transcribe messages you dictate. Alternatively, you can just record your message and send it from your Apple Watch.

Apps and glances

'Glances' are just mini versions of apps that are accessed by swiping up from the bottom of the Apple Watch screen. Apple's strategy here is to minimise the time you spend looking at your Watch. Glances are designed to give you a quick views of your app in an easily digestible chunk. If you want more information, then you can click the glance to open the app.

You can access your apps from the home screen - press the digital crown to get there. On the home screen you will see a cluster of app icons that look a little like bubbles. Navigating this can be a bit hit and miss, and if you accidentally hit the wrong icon you will end up opening the wrong app, which is likely to be frustrating. I'm hoping to discover a



simpler way to scroll through apps by using the digital crown.

Getting the apps onto your Apple Watch isn't simple either. You can't download them directly to the Apple Watch; instead, you have to browse the App Store from your iPhone, download them from there, and then sync the two devices. You also have to organise the way the apps appear on the home screen of the Watch within the iPhone app.

It may be the case that most apps are actually opened via glances, or not at all. A number of apps are already available for the Apple Watch, but most of these are, I think, only ever going to

be used as glances. I can't imagine that anyone would choose to use an app on their Apple Watch rather than their iPhone if their iPhone is nearby - as it has to be.

There are a few apps that could prove to be useful, however. For example, the Remote Camera app will turn the tiny screen of your Apple Watch into a viewfinder, which could be useful for selfies.

Time

Not only is the Apple Watch accurate to within 50ms of the Universal Time Standard, it will also spring forward when daylight saving time begins, and fall back in the autumn. What's more, it will adjust according to the time zone you are in.

The watch face is not on view all the time - presumably to save the battery. If you want to see the time, you have to raise your arm to make the screen come on.

Each of the nine watch faces is customisable. You can select colours and add details, choosing from various 'complications' - the technical watchmaking term for specialised functions.

Health and fitness

The Apple Watch has a few sensors, including a gyroscope, an accelerometer and a heart rate monitor. These sensors feed into the Activity app, so that you can chart your efforts to be fitter.

However, if you were hoping that the Watch would log how far you have run you are

out of luck. The Apple Watch doesn't have GPS - it relies on the iPhone for that. So unless your iPhone is in your pocket the Watch can't tell accurately how much distance you've covered. It can only use the accelerometer to count your steps and extrapolate the distance covered from that.

The Apple Watch was expected to come with even more sensors than this for more advanced health features, but there are some reports claiming that manufacturing problems and reliability issues have forced Apple to leave sensors including blood pressure sensors out of its smartwatch.

That hasn't stopped Apple teaming up with medical researchers, though, and offering ResearchKit, an open source software framework that lets researchers create apps for medical studies. ResearchKit is already being used by several of the world's leading medical institutions to gain further insight into diseases, according to Apple.

Apple Pay

The Apple Watch includes an NFC chip, so you will be able to use it to pay for things - just as soon as Apple Pay arrives in the UK. When it does, you will just be able to wave your Apple Watch near an NFC-equipped payment terminal, there is no need to tap it. You'll get haptic feedback on your wrist, so you'll know whether it's worked.

To set up your Apple Watch for





Apple Pay you need to add your credit or debit card information to the Apple Watch app on your iPhone; a token will then be synched with your Apple Watch and used when you pay for something. For security purposes your credit or debit card details will never be sent to your Apple Watch, and if you remove the watch from your wrist you will need a code before Apple Pay can be used again.

Phone calls

You can make and receive calls from your wrist, which will make you look like someone out of a science fiction novel or a detective - or just a bit of a plonker.

To place a call, press the 'friendship button' and select your friend. The Apple Watch comes with a microphone and speaker, but you could use a synched Bluetooth headset and not look quite so silly.

Battery life

Apple claims that on a typical day, with typical usage, you should get 18 hours of battery life from the Apple Watch. So you will have to charge it every day, which rules out being able to sleep with the watch on - a disappointment for developers of any sleep-related apps.

Your use may vary. Apple's typical day includes a half-hour workout, but if you work out more

you may use up the battery quicker - in Apple's tests it lasted 6.5 hours during a workout, so you should at least be able to run that marathon without running out of battery. If you use the Apple Watch to play music you will find it's a bit of a battery hog - Apple got 6.5 hours of audio playback out of the test Apple Watch before it ran out of power.

Just before your Watch runs out of battery it will switch to Power Reserve, which will enable you to see the time for another 72 hours.

Apple says charging the Watch to 100 percent takes 2.5 hours, although you can get to 80 percent in 1.5 hours. The Watch charges via a magnetic device that snaps onto the back - it's inductive charging, kind of like an electric toothbrush. The Apple Watch comes with an inductive charger, which probably won't be cheap to replace if you break it, or just want a second one for work.

Price

You can preorder the Apple Watch on 10 April, the day when you will also be able to see Watches in the Apple Store.

However, you won't be able to buy one - or receive the one you have ordered - until 24 April.

Prices vary depending on which Watch and strap you choose. The Apple Watch will start at £299 in the UK - for the 38mm Sport with a plastic band. The 42mm version costs £40 more, at £339. The stainless steel Apple Watch price starts at £479, while the 18-carat gold Apple Watch Edition is in a different league, starting at £8,000.

The 42mm version of the Apple Watch Sport is £40 more than the 38mm version. This price differential is the same for the stainless steel option. The Apple Watch 38mm version is only £40 less than the 42mm version, for example.

Apple has been criticised for introducing the extravagantly priced Apple Watch Edition, a strategy apparently spearheaded by its head of design Jony Ive, who wanted to offer a watch for this part of the market. It seems reasonable to imagine that if a few well-known celebrities are seen wearing Apple Watches, then it will help the promotional effort. By targeting fashion and celebrity, Apple might well be able to make the Apple Watch appeal to the mainstream rather than just the gadget lovers and geeks.



From £299 inc VAT

Contact

■ apple.com/uk

Apple specifications

Apple Watch: 38mm or 42mm case; 316L stainless steel; sapphire crystal; Retina display; ceramic back; composite back.
 Apple Watch Sport: 38mm or 42mm case; 7000 Series silver aluminium; Ion-X glass; Retina display; composite back.
 Apple Watch Edition: 38mm or 42mm case; 18-carat yellow gold; sapphire crystal; Retina display; ceramic back; 18-hour battery life

Macworld

PREVIEW

From \$199 (£132)

Contact

■ getpebble.com

Pebble specifications

Black/white/red watch case and silicone band with black PVD stainless steel bezel; seven-day battery life; works with iOS 8 on iPhone 4s and above; water-resistant

Macworld

PREVIEW

Apple Watch vs Pebble Time

Even though the smartwatch game started pretty slowly, as time goes by it seems like every man and his brother are bringing out smartwatches for both Android and iOS. Pebble, which successfully crowdfunded its original smartwatch on Kickstarter back in May 2012, has headed back to the platform to finance the next-generation Pebble Time (and Time Steel).

Apple has also thrown its hat into the smartwatch ring, with the release of the Apple Watch (read our in-depth guide on page 12 and preview on page 70). But how do the two compare? Read on to find out.

Design

The Pebble Time has gone on a diet as its 20 percent thinner than its predecessor, measuring in at only 9.5mm thick. It can be worn on both your left and right wrists, which is handy because not everyone wears a watch on the same wrist. There is only one size of Pebble Time available – it is 40.5mm tall.

When the Apple Watch was first unveiled, there was concern that it was right-handed only, but the watch face rotates, so it can also be worn on both hands. The Apple Watch is 10.5mm thick, so slightly chunkier than the Pebble.

There are multiple versions of both watches. The Pebble Time comes in three colours: black, white and red, while the Pebble Time Steel comes in stainless steel silver, gunmetal black and gold. They support interchangeable watchstraps so you can personalise the watch for different occasions.

There are more variations of the Apple Watch than Pebble Time. There's the standard Apple Watch, which will be available with stainless steel or space grey steel cases, as well as the Watch Sport with anodised aluminium in silver or Space Grey. Apple has also created the Watch Edition for those with money to burn; it comes in an 18-carat gold body in either yellow or rose gold. Prices start at £8,000.

As well as the three different variants of the Apple Watch, each



also comes in a choice of screen sizes (38- or 42mm) to address the issue of many smartwatches being too large for slender wrists.

As well as colour options for each Apple Watch, a variety of interchangeable straps are available for each type. The Watch Sport, for example, comes with more colourful and durable straps than the Watch or Watch Edition. There are a total of 38 available combinations.

The Pebble Time will offer a number of straps of its own, but other companies will be able to sell their own designs, too. When you compare the photos of the Apple Watch Edition and the gold Pebble Time Steel, there's an uncanny similarity. Is Pebble actively going after potential Watch Edition customers and offering them a cheaper alternative?

Display

The display is where the difference between the Apple Watch and Pebble Time is really noticeable. Pebble has decided that, as with the first-generation smartwatch, the Time will have an ePaper display. The only difference is that this time it's injected some colour into the screen. The display isn't touchscreen, though – input is delivered solely from the buttons on the side of the watch.

Apple, on the other hand, has gone all out on the Apple Watch display. Boasting an incredible pixel density around 330ppi, the Watch and Watch Edition have a sapphire display. Sapphire is one of the hardest transparent materials in the world, second only to diamond. The Watch Sport, on the other hand, uses lighter, strengthened Ion-X glass for its display.

It also has touchscreen input technology that can sense the degree of pressure being used and so distinguish between a tap and a hard press. It's technology that will be critical to using the Apple Watch.

With all this technology and limited battery power, the Apple Watch won't have an always-on screen like the Pebble Time; instead, the screen will turn on whenever you raise your wrist to use it.

Battery life

Even though they may look very similar, the Pebble Time and Apple Watch have a range of unique features. The Time's battery life is definitely one of its most attractive features as it can last up to seven days on a single charge. And while seven days is great, the Pebble Time Steel boasts a battery life that'll last up to 10 days.

Apple can't compete with that – its battery manages 18 hours. At



least the device is easy to charge thanks to its MagSafe technology.

Water resistance

The Pebble Time offers water resistance and can be used in the shower. The Apple Watch is water resistant but not water proof.

Companion device

Unlike the Apple Watch, which requires the user to have an iPhone for the setup and most features, the Pebble Time can work with both Android and iOS. That's not to say that it performs equally on both platforms, though.

Voice recognition

Using the Pebble Time's built-in mic with the Android OS enables you to send voice replies to incoming notifications (SMS, WhatsApp, Facebook Messenger, and so on), but on iOS it's limited to voice replying to Gmail notifications. Similarly, you can use Siri on the Apple Watch to send voice messages and dictate replies.

Unique features

The Apple Watch introduces technology not used in any Apple product before: the so-called Taptic Engine. According to Apple's website, it's "a linear actuator inside the Apple Watch that produces haptic feedback". What this means is that you'll feel something rather like a tap on the wrist when you have a notification - rather more discreet than the over-the-top vibration that other smartwatches have that notify not just the wearer but everyone else in the room as well. There will be a recognisably different

sensation for different kinds of interaction, and you can even send your heartbeat to someone so they can feel it on their wrist. It's almost sickeningly romantic, but still a pretty cool feature to have.

Apps

Content plays a huge part in the success of any smartwatch. No one would be interested in a watch that lacked good content (apps, information) however good it looked. The Pebble Time has the added bonus of being compatible with the 6,500 apps and watch faces available for the first-generation Pebble. Apps include a range of fitness and sleep trackers.

The Apple Watch has no previous generation and therefore no existing material to port over. That doesn't worry Apple, though - it released the Apple Watch API to developers months ago in the hope that content will be available from day one. These won't be native apps, as you'd expect, but extensions from the parent iOS app - for example, if you have Clear installed on your iPhone, you'll be able to check off points from your lists from your Apple Watch.

You'll also get a dedicated health and fitness system with the Apple Watch that'll collect data via sensors on the watch and sync with your Health app, available in iOS 8. It'll serve up daily goals, notifying you as you pass them.

While Pebble Time has no direct support for a health and fitness system, developers are using its API to turn the watch into a fitness tracker, feeding information to your phone about workouts, steps, sleep and so on. The Pebble Time is compatible with RunKeeper, Misfit and Jawbone just to name a few.

Notifications

Pebble Time marks the release of an updated Pebble user interface called Timeline. Instead of all your notifications being hidden inside their own apps, as they are now, they'll be laid out chronologically. With a single click you'll be able to see what you've got coming up - the watch connects to calendars, alarms and apps, organising all the most relevant information for you. You'll also be able to scroll back to that

missed notification or recall how many steps you took yesterday.

Apple Watch will alert you to notifications by tapping you on your wrist. You'll then be presented with actions that you can select directly from the Watch, such as favouriting a tweet you've just been mentioned in - similar to how notifications work in iOS 8.

Digital Crown

The crown, typically used to adjust the time on a watch, has been reimaged. It's now the other main control besides the touchscreen for navigating the Apple Watch interface.

Interface

The Apple Watch user interface utilises the Digital Crown, a second button below the crown and the touchscreen. The watch face is touch-sensitive and reacts to taps and swipes, as well as the level of pressure you are using, distinguishing between a regular tap and a hard press to access different menus.

There are three buttons on the side of the Pebble Time that are your key to navigation. The top and bottom buttons will scroll through various menus, while the middle button is reserved for selecting. There's also a single button on the other side, which has the same purpose as on the previous generation - to go back a step.

Price

The Pebble Time Kickstarter campaign reached its \$500,000 target in just 17 minutes and at the time of writing was just under \$18m. Pebble says its watch will be released in May with a retail price of \$199 (£132) but if you decide to back it now, you can get it for \$169 (£112).

The Pebble Watch Steel is slated for a July release, with a \$299 (£199) retail price and a backer's price of \$250 (£166). Due to the response to Pebble Time (over 64,000 backers), it's entirely possible the release date will slip - especially for those who waited to back the project as it's organised on a first come, first served basis.

You can preorder an Apple Watch from 10 April, and it will be in the shops from 24 April. **Lewis Painter**

£9 inc VAT

Contact

■ aukey.com

Specifications

3600mAh lithium-polymer power bank; 5W (5V, 1A) Lightning input; 7.5W (5V, 1.5A) USB output; 124x46x12mm; 85g; 18-month warranty

Macworld



EDITORS' CHOICE

Aukey PB-N30 3600mAh charger

Aukey's 3600mAh External Battery Charger is the first power bank to charge from Lightning rather than Micro-USB, making it a must-have for iPhone users who don't want to carry both cables.

We say iPhone users; actually this power bank will charge any phone, tablet or other USB-powered device, you simply need to supply your own USB cable. But the Aukey refills its own battery over a Lightning rather than Micro-USB connection, and we know of few Android- and Windows Phone users who have spare Lightning cables lying around (one is not supplied in the box, which is no surprise given that Apple charges more for a Lightning cable than this power bank costs, just £8.99 at Amazon).

Lightning was introduced by Apple in September 2012 with the iPhone 5, fifth-generation iPod touch and seventh-generation iPod nano. A month later, the technology was added to the fourth-generation iPad and original iPad mini. Older iOS devices use the 30-pin dock, but if you have any of these or later iOS devices then the Aukey's 3600mAh battery charger is well worth a look.

Particularly the iPhone. Aukey doesn't state its battery's efficiency, but with most offering around 70 percent (some is lost through heat generated and voltage conversion), you can expect around 2500mAh. That's not enough to completely fill an iPad's battery, but it would fill an iPhone 5 (1440mAh), 5c (1507mAh) or 5s (1570mAh) around 1.7 times, an iPhone 6 (1810mAh) around 1.5 times, and it would give a 6 Plus (2915mAh) just under a full charge.



The LED will go through various colours while charging to show you how much power remains: white means more than 60 percent; green is between 20- and 60 percent; and red is below 20 percent.

The battery tech inside this power bank supports auto-on/-off, too, so you can plug it in and leave it be: it'll automatically switch off when either it or your iPhone's battery is full, with no wastage.

Note that this Aukey power bank will charge your iPhone faster than it will fill its own battery. That's because it has a 7.5W input and just a 5W input. Apple's own iPhone charger is rated at just 5W, but if fast charging is what you need then you should note that some power banks offer up to 12W via USB. (Charging your iPhone at more than 5W will not hurt its battery.)

Leaving the tech aside, Aukey's charger is a nice-looking device. It's built from matt black plastic, with rounded edges and a very slim (12mm) and light (85g) design. There's just a single output, but at this capacity a second output would be pointless.

Aukey supplies a soft carry case if you're throwing the External Battery Charger into a bag, but you'd hardly notice this thing in your pocket. Intriguingly it also supplies a lime green suction pad, and we have no idea why.

Macworld's buying advice

Amazing value at £9, a Lightning charging port and 3600mAh capacity make this Aukey power bank the perfect accessory for the iPhone 5, 5s, 5c, 6 and 6 Plus. **Marie Brewis**



£99 inc VAT

Contact

■ fitbit.com/uk

Specifications

Windows XP/Vista/7/8; Mac OS X 10.5 or later; wireless 802.11b; WEP/WPA/WPA2 personal security; automatic (DCHP) iP setup; backlit screen; displays weight, BMI, user selection; 4x 1.5V AA batteries; measure range 9- to 158kg; (312x312x33.4mm); 1.93kg

Macworld



Fitbit Aria

Fitbit might be a market leader in wearable tech, but one of its products cannot be worn on the body. The

Fitbit Aria is a smart scale that measures your weight, body fat percentage and BMI. It wirelessly syncs these stats with your Fitbit Dashboard and mobile apps, and is a great partner for the Fitbit activity trackers.

Powered by four AA batteries, the Aria is certainly one of the most stylish scales around. It is available in chic black or white, topped by 0.3in of glass. The LED display is clear and can be read easily even through blurry just-woke-up eyes.

Body fat percentage is the total mass of fat divided by total body mass; body fat includes essential body fat and storage body fat. For most women, 14- to 31 percent is a healthy range. For men, it's closer to 6- to 24 percent.

The Aria measures body fat percentage by using a body impedance method. It has four sets of ITO electrodes that shoot a small 180 micro amp current up one leg and down other to measure body impedance. (Electrical impedance is the measure of the opposition that a circuit presents to a current when a voltage is applied. Body impedance uses a current to ascertain body fat percentage.)

No electronic scale is going to be completely accurate at body fat percentage rating, but the Aria will give you a decent idea. Because this measurement can be subjective, the scale's body fat reading may



not match other scales or the results of manual methods such as callipers, says Fitbit.

BMI stands for body mass index. It looks at body fat in relation to height and weight and tells you if you're in the healthy range.

If you have a BMI above the healthy range you are at raised risk of the serious health problems linked to being overweight, such as type 2 diabetes and heart disease.

A BMI between 18.5 and 24.9 is a healthy range, showing that you're a healthy weight for your height. Below that and it suggests you are underweight. Above and you're overweight, according to the BMI rules. Over 30 and I'm afraid that the BMI rules say you're obese.

Of course, if you have lots of muscle weight then the BMI might not mean much to you. But you'll know in your heart whether those extra pounds are muscle or fat.

The Fitbit Aria's LED display identifies you by name, then displays your weight and body fat percentage. It then shows you that it is syncing that data to your account.

The Aria recognizes up to eight individual users, so works for the whole family. Some may find setting up this up tricky, but once done the scale works out who's who using historical data. Everyone's info is private by default.

Fitbit tracker users don't need to have an Aria scale, but its wireless syncing with a Fitbit account means you don't have to manually input your weight. Simply step on the scales and the Aria does the rest.

As with any scale make sure that it's in the same place each time you weigh yourself, as scales can give different readings depending on the flatness of the floor. Don't put it on carpet as it will make you lighter, which is nice but cheating.

Some users have complained about the Aria's accuracy, but placing the scales in the same spot and weighing yourself at the same time each day should give you consistent readings. If the device is picked up and moved between measurements, Fitbit says the scale will calibrate the next time it is used. Up to two consecutive weigh-ins will then be required before the scale is recalibrated and again displays consistent measurements.

Fitbit suggests that if you have concerns about the scale's accuracy, you should weigh yourself at least five consecutive times. By the fifth weigh-in, you should see accurate measurements consistent within 1lb.

Macworld's buying advice

If weight loss is one of your fitness goals, then the Aria is a great tool to combine with your Fitbit activity tracker. **Simon Jary**



£790 inc VAT

Contact

■ hp.com/uk

Specifications

27in (2560x1440, 109ppi)
LCD monitor; matt anti-glare 8-bit + Hi-FRAC AH-IPS panel; 2x DisplayPort 1.2; 1x HDMI 1.4 (both with HDCP support); 7ms specified GtG response time; 4x USB 3.0, 2x USB 2.0 DreamColor ports; height adjustable stand; 641x655x379mm; 8.8kg

Macworld



HP DreamColor Z27x

The HP DreamColor Z27x is a large 27in desktop display with a healthy pixel count of 2560x1440. This leads to a pixel density of around 109ppi, which helps to reduce visible pixellation. Compare this to monitors with just 1920x1080 pixels in the same sized panel, which at 82ppi appear coarse when viewed at typical operating distances.

This panel is far from Retina-class, but it does match the pixel density of a full-HD panel sized around 19 inches along the diagonal.

The Z27x is aimed at professional users who will pay for the extra quality - and that includes improved build and operational details, as well as better image quality. At around £790, it's considerably cheaper than the former price of 10-bit IPS panels, which were once closer to the £2,000 mark.

If the price seems to good to be true compared to 10-bit panels a few years ago, it's because this isn't a 10-bit panel. An updated technology trick has given manufacturers a marketing loophole to let them promise 10-bit colour, even though the panel is still only an 8-bit design.

The HP takes an AH-IPS display of 8-bit technology. The LG-made panel used here cleverly fudges the additional colours available to 10-bit native screens through a temporal dithering technique called frame-rate control (FRC), where pixels alternate at high speed between two colours that are available to 8-bit panels, to fool the eye into seeing a third 10-bit colour-space hue. There can, however, be side effects from this cost-cutting measure.

Build quality of the DreamColor is workmanlike but among the best on the market, with a sturdy fully adjustable pillar stand and robust charcoal-grey panel chassis. The LCD panel is supported in a frame with a 20mm bezel all around.

Two DisplayPort 1.2 ports are available, plus one HDMI 1.4 port. With the help of the increased bandwidth of DP 1.2, for instance, the DreamColor can also accept incoming 4K video (specifically up to 4096x2160 pixels), which is then downsampled for viewing on the



available 2560x1440 native panel. Framerate (vertical frequency) is limited in this case to 24 progressive frames per second though.

The onscreen menus stand out against the generic and often labyrinthine options found on cheaper consumer monitors. A vertical array of five buttons run up the right side of the bezel, from where it's easy to dig deep by pressing the button alongside the changing OSD text options. Important information such as current working colour space, video delay, serial number and firmware revision can all be called up quickly.

We tested the main parameters of image quality with a Datacolor colorimeter, connected to a regular 8-bit graphics adaptor on a MacBook Pro (15in, Retina, late 2013).

With the panel set to native colour space, we measured 96 percent sRGB coverage; and 85 percent NTSC and 90 percent Adobe RGB.

Contrast ratio in a chequerboard test reached 790:1 at nominal 75- and 100 percent brightness settings, and 670:1 at a more realistic brightness setting of 167cd/m².

Luminance uniformity at different brightness settings was very good, typically within around 5 percent, rising to a maximum deviation of 11- to 12 percent at top at half-brightness setting.

Colour accuracy was impressive, with a 48-swatch test providing an overall average Delta E of just 0.9.

Power consumption was low, reaching a maximum of 58W at full panel brightness, and drawing 33W at a setting of 120cd/m².

Judged subjectively, the panel image was cleanly viewable from all angles. Viewed up closer there was some grain clearly evident, likely from the 3H anti-glare hard coating. This was especially visible on white backgrounds such as text documents. Text was reasonably sharp and clear, though.

Some chromatic aberration was also visible on high-contrast edges. This is comparable to the coloured edge highlights found in lower-grade optics, known to photographers as 'purple fringing'. The effect on this HP display was subtle; but once seen users with sensitive vision may find it difficult to 'unsee' it. It was most apparent when the Z27x was used with OS X rather than Windows, and may be an artefact of the OS' sub-pixel rendering, or from LG's Hi-FRC technique for artificially extending colour depth.

Macworld's buying advice

The Z27x offers great build quality and comprehensive functions, while still maintaining essential ease of use. **Andrew Harrison**

£69 inc VAT

Contact

■ hp.com/uk

Specifications

Colour inkjet multifunction; max print resolution 4800x1200dpi; quoted print speed B=12ppm, C=8ppm; actual print speed B=12.5ppm, C=8.2ppm; 1200x1200dpi optical scanner; copier; USB 2.0, Wi-Fi 802.11b/g/n; memory card drive; mobile device support; 6.75cm touchscreen display; 125-sheet main input; 15-sheet photo tray; Auto duplex; 454x410x161mm; 6.8kg; ink cost B=£18; C=£25; print life (pages) B=600; C=415; 1-year warranty

Macworld



HP Envy 5640 e-All-in-One

HP's Photosmart range of printers were a revelation when they first arrived at the beginning of this decade. They had all the features any self-respecting digital enthusiast could hanker after and wrapped them up in an elegant package that was topped off with a crisp touchscreen interface. They were, however, pricey. The models from the Envy range are the natural successors to the Photosmarts - highly functional but beautifully presented hardware that's available at an affordable price.

This sub-£70 zone can be a graveyard for design values, with ugly blocky designs the most regular residents, but the Envy is having none of this. We shouldn't perhaps overstate its looks, but the subtle curves and bowline frontage blends with a sleek black exterior that sees the 5640 effortlessly dominate its surroundings. And that's before we peruse such design twists as the exquisite curved door. Pop this open, and a memory card drive emerges from the darkness. On the down side there's no support for USB drives, which will be an annoyance to some.

There's substance to the form too, and the HP's construction values are high. The main paper tray feels well made and can hold a sizeable 125 sheets of paper. In addition, a 15-sheet photo tray takes care of the smaller media. We're big fans of this dual-tray design, and those who move constantly between standard printing and photo-work will appreciate the convenience of having a second input. The rugged construction means the HP sucks in the paper and bowls it out again with not a hint of a ruffle or a jam.

Of course, one of the keys to that streamlined design is, well, the lack of keys. A touchscreen interface takes you through the various options. Admittedly, it's neither the most responsive or the easiest to follow of the touchscreens that we've seen. Some of the options are represented by tiny icons, so you won't always know exactly what's going on, which is rather throwing away one of the huge advantages of an inviting



touchscreen interface. But even with these faults, the interface remains rather more enjoyable to use than the unrewarding button control panels employed by lesser lights in the budget printing firmament. It's just that, with a little extra effort, this could have been stunning rather than adequate.

Connectivity is ample. Besides the obligatory USB 2.0 interface, the main draw will be the 802.11b/g/n wireless connection. We had no problems connecting to this, and you can even use it to hook up to HP for extra features and printouts. You can also print to the HP using an iPhone or iPad, and this can be achieved even if you don't have a Wi-Fi network up and running. This isn't a business model, and that explains the lack of ethernet.

Ultimately, though, the 5640's excellence (or not) will be defined by its ability to print and scan to a high level. The scanner doesn't have a particularly flexible lid, so there will be better models for those who need to scan large items (such as books). The scanning software is also a touch cumbersome compared to, for example, the straightforward Epson and Canon interfaces. Those latter software front-ends tend to have a greater range of features available, as well. The 5640 is reasonably swift at scanning, turning out 300dpi output in just 12 seconds. The images looked good, although we weren't convinced that every detail was rendered perfectly, and the colour depth isn't as impressive as we might like.

Printing is rather better. Text can be run off at a rate of 12.5ppm in the Draft mode, and 10.1ppm in

Normal. Even the Draft mode is of good quality - if a little light - while the Normal mode is pleasingly fast while offering sufficient quality for most text work. This being an inkjet, you're never going to get laser-quality crispness from text characters, but in Normal mode, the output is dark and reasonably clean. The 0.7ppm Best mode is there for an extra lick of clarity. There is an auto-duplex mode, and this drops performance by around 42 percent - not a bad percentage for a sub-£100 inkjet, although not perhaps one sufficiently high to have you resorting to the paper-saving auto-duplex mode on a regular basis. The graphics output is nicely rendered, and happily free of artefacts, although you don't see the same rainbow of colours bursting out as on Canon prints - HP is still a short distance behind its rival when it comes to colour photos. Speed drops to 8.2ppm for Draft, and a very solid 6.7ppm for Normal.

Rejecting the modern trend for having multiple colour tanks, the Envy has gone back to one unified colour cartridge. The cost of this is surprisingly economical when the XL version is chosen, working out at 6p for a page of colour - this is pretty good for a sub-£70 model, although the likes of the Canon Pixma MG5550 (tinyurl.com/LkwLjde) works out at an even cheaper 4.8p per page. At 3p a page for black, though, it's slightly more expensive than the average of 2.5- to 2.6p.

Macworld's buying advice

The HP Envy 5640 is a beautiful device, but it falls short of inspiring true envy. **Robin Morris**



Changing the way you click

Apple's new MacBook diverges with what we've been used to in the past

The recent Apple event gave people who follow Apple news plenty to talk about. But for Mac users, the biggest news probably has to do with all the ways the new MacBook diverges from what we've been used to over the past few years.

No MagSafe, Thunderbolt or standard USB ports, all replaced by a single USB-C port – that's big news, undoubtedly. But I'm just as interested in the different approach Apple is taking with input devices. After all, the new MacBook's keyboard and trackpad are unlike any of those currently found in the Mac line.

The Mac standard

In the past few years, the Mac product line has been more consistent than I can remember it having been for ages. USB and Thunderbolt are everywhere. All of Apple's keyboards, desktop and laptop, have been the same exact design for quite a while now. And while buyers of new desktop Macs can opt for a

mouse, they can also buy a Bluetooth trackpad that more or less matches the one found in Apple's laptops.

Here comes the MacBook, shaking things up. That's not a bad thing, but unless the MacBook remains a strange outlier, we may be witnessing an end to this era of stability and the beginning of a shake-up in everything we take for granted on the Mac.

The new keyboard

Apple designed the keyboard in the new MacBook to have reduced key travel, presumably because the thing is just too thin to allow those keys to move very far up or down. That seems reasonable, but when Apple extolled the virtues of the new keyboard on Monday, it raved about the increased size and stability of its key caps, the clever design of the butterfly keyboard switches, the stainless steel dome switches. So is this a compromise keyboard specifically designed for the MacBook, or does Apple feel this

keyboard design is so great that it's going to make sure that all its future Mac keyboards are exactly the same way?

I type around 110 words per minute and write for a living, so keyboards are very important to my livelihood. After Apple's event, I spent a lot of time typing on the new MacBook keyboard in the demo area. I'm not ready to render any final judgments, but I can attest that it's going to take some getting used to.

The very small amount of key travel is the first thing I noticed. When you push a key, it depresses slightly, and lands hard. It doesn't feel like a cheap keyboard, but it's a shockingly different feel than the current crop of Apple keyboards. It's like a cross between those current Apple keyboards and typing on an iPad screen, if that makes any sense – it's got the physical feel of a real keyboard but the hard landing of hitting that glass screen.

In fact, I found that I typed a lot faster on the new MacBook keyboard once I adapted some of my iPad typing

technique to the new keyboard. My typing style on a physical keyboard includes a lot of force as a push through depressing each key. With the new MacBook keyboard, when I started thinking of just tapping the key with a finger (as if I was tapping the keys on an iPad's screen) and not using any extra force, things started to move a lot better.

Apple claims that the keys are far more stable than previous keyboards, and that seems right, though I admit that I've never really had a complaint about the keys on my keyboard feeling unstable. Each key cap is larger, which means they should be easier to hit, but the space between keys has been reduced, which would seem to me to be a decision that would increase the chances that your finger will hit the wrong key.

Beyond the changes to the key movement itself, this keyboard offers a few other interesting features. Each key is individually LED lit. The Escape key has been elongated and the function keys narrowed. The arrow keys have been redesigned; the up and down arrows are still half-height, but the left and right arrows are now full sized. I can't decide if I like it or not, so for now I'll just say: change acknowledged.

The fact is, any time you switch to a new keyboard, there's an adjustment period, especially if the keyboard style is drastically different. That's the case here. Still, my gut feeling is that this is the best keyboard Apple could make given the constraints of the MacBook. It's too early to say for sure, but if I had to make a judgment right now I'd say that I hope this keyboard stays with the MacBook and goes no further.

The new trackpad

The highlight of my time using the MacBook in the hands-on area after the event was undoubtedly using the new Force Touch trackpad. It messes with your head, but in a good way. I may be cautious when it comes to the keyboard, but I'm in love with the new trackpad.

I have never liked the tap-to-click gesture on trackpads, preferring a physical click. So hearing that the new

MacBook trackpad doesn't actually depress made me despair. But what Apple has implemented – a series of force sensors underneath the trackpad surface and a Taptic Engine that can vibrate the surface on demand – is a remarkable simulation of the real thing. If I hadn't known how the thing worked, I would have sworn that Apple had got its own announcement wrong and that this trackpad was just like all of the other trackpads on other Apple laptops.

No. When you press on the trackpad, the Taptic Engine fires up and shakes the surface of the trackpad. Your brain interprets the vibration and the pressure as a downward click, even though that's not what's actually happening. (The vibration from the Taptic Engine is from side to side, not up and down.)

This is all to drive a little more thickness of out of the MacBook, but it has a fun side benefit: now the clickiness of the trackpad can be controlled by software. A new slider in the Trackpad system preference pane lets you adjust how much force is required for a click, so you can tweak it to fit your preferences.

More impressively, Apple should be rolling this functionality out to third-party Mac developers soon. I'm curious to see what sorts of features they'll dream up. As a proof of concept, Apple demonstrated a version of QuickTime Player that allows you to adjust the fast-forward speed based on how hard you press on the fast-forward button. The feature itself is a little gimmicky, but as a demo for the new trackpad it was impressive. The harder I pressed on the trackpad, the more clicks I felt. It was as if the trackpad was tabbed somehow, so I could feel as I pushed through each successive step to the next.

And all the while, the trackpad wasn't actually moving lower – it was all in my mind. It was enough to make me immediately desire a version of this trackpad for my desktop.

The new MacBook also introduces an entirely new gesture to the Mac vocabulary. You know about clicks, double- and ⌘-clicks. Now meet the Force click. On the version of OS X running on the MacBooks in the demo

room, I could click extra hard on a word on a web page in Safari, and it would open a floating palette with a dictionary definition or a link to a Wikipedia page. (In technical terms, Apple has wired its Data Detectors technology to the Force click feature in Safari. On today's Macs, you'd have control-click on a word and choose Look Up to perform the exact same feature.) In Finder, a Force click kicks off a Quick Look preview.

Presumably developers will be able to support Force clicks in interesting ways. But with both of these features we're back to that whole idea of 'the Mac standard' again: The number of Macs that support these gestures will be few and far between for quite a while yet. Even if Apple does move Force Touch into every trackpad it makes – which I think is likely – it'll be awhile before a majority of Mac users can take advantage of those features. Still, the idea of giving trackpad gestures an additional dimension seems great to me. But then, I am a committed trackpad user. Can you Force-click a mouse? Maybe we'll find out soon.

Let's not forget that the existence of the Taptic Engine isn't just wired to emulating mouse clicks. According to Apple, the Force Touch trackpad can communicate other goings-on on your Mac to you via a vibration. Imagine dragging to center a text block in Keynote, and feeling when you hit dead center, rather than just seeing it on screen. The new trackpad makes that kind of interaction possible.

Eras of change

It's human nature to prefer stability and fear change. After a nice era of stability for the Mac platform, it sure feels like the new MacBook is ushering in an era of change. It remains to be seen just how many of its innovations make it across to the rest of the Mac product line, but Apple rarely does things halfheartedly. I'm excited about the future of the Force Touch trackpad and a little more sceptical about the MacBook's new keyboard, but there's no doubt that both of them may change the way we all use our Macs in the next few years.

New & noteworthy

Ashleigh Allsopp presents the best new iPad, iPhone and Apple Watch accessories

Griffin WatchStand >>

£20

store.griffintechnology.com

With the launch of the Apple Watch comes a slew of new accessories, including this one from Griffin. The WatchStand allows you to charge your watch simply by laying it on the cradle. It'll snap into place, whether you choose to position it vertically or horizontally, and begin charging. You'll wrap your own Apple Watch charging cable around the WatchStand's core, which slides down into the post and is neatly hidden away. And at the bottom of the stand, there's a little cradle that lets you store your iPhone there, too.



JBL Go ^

£25

uk.jbl.com

The tiny, portable and affordable JBL Go speaker was launched by the company at MWC 2015. It's available in a variety of colours, including pink, teal, red, yellow, blue, black, orange and grey, and connects to your iPhone or iPad via Bluetooth. You only get five hours of battery life, though.

Surf EnerPlex for iPhone 6 >

£66

goenerplex.com

If you're planning a camping trip for this summer, the EnerPlex Surf case for iPhone 6 might come in handy. It's a protective case with a battery built-in that can use the sun's glorious rays to charge if need be. The battery is designed to provide a full recharge for your smartphone, so should double the battery life even before you take advantage of the solar charging capabilities. It's available in black, orange and blue designs.





HiRise for Apple Watch

£45

twelvesouth.com

The HiRise for Apple Watch adds to the company's already popular line of stands for Apple products. It works with the Apple Watch Magnetic Charging Cable and holds the watch at a height and angle designed to allow you to interact with it while it charges. It's available in Silver or Black, and works with any of the Apple Watch straps.

X-Doria Defense Edge

£20

x-doria.com

Another type of Apple Watch accessory that's emerged comes from X-Doria in the form of an Apple Watch protective case. If you've chosen a gold Apple Watch that cost you £8,000 you're not going to want to cover it up with one of these, but for those with the £299 aluminium model it could be appealing. The Defense Edge snaps onto your Apple Watch to protect it from bumps or scratches. It comes in gold, silver, blue or red and is available for both Apple Watch sizes.



CATWALK

The best-looking cases for your iPhone and iPad

iPhone 6 Wallet Case

£27

jimmycase.com



Booqpad for iPad Air 2

£55

booq.co.uk

Cath Kidston

Clouds iPad case

£35

asos.com





Use Apple's Health app to get fit

Cliff Joseph explains how to get into shape using iOS 8's built-in Health app

1. Dashboard

The Health app has four key features that you will see listed in the toolbar running across the bottom of the screen. The first is the Dashboard, which displays graphs of the main sets of information that you have collected.

Fortunately, you don't need to own the Apple Watch or any other third-party apps or fitness bands to see how the Dashboard works. The Health App can work on its own and use the motion-sensor that is built into your iPhone to collect information even when you're just walking along the road with the iPhone in your pocket (iPads don't have this motion-sensor, so the Health app can't be used with an iPad).

By default, the Health app displays three graphs, showing the number of normal walking steps you take each day,

as well as the total distance covered by both running and walking. It even calculates the flights of steps that you've climbed, as that's good exercise too. You can also view this information as a daily, weekly, monthly or annual graph, giving you an idea of how your pattern of exercise has changed (or not) over a period of time.

2. Data delving

Tap on any of these graphs and you'll see some additional options for displaying and sharing this information. If your main exercise is running or swimming then you probably don't need to see this Steps graph, so you can just remove it from the Dashboard altogether.

Alternatively, you can select 'show all data', which tells Health to dig through its memory and show all the information it

has stored on that particular activity going back as far as it can. You can also add your own 'data points', adding in information that the iPhone may not have recorded – such as a lunchtime stroll while you leave your iPhone charging back in the office.

So far, though, we've only seen data that is collected by the Health app itself. The real power of the Health app lies in its ability to share data with other apps.

3. Other apps

Tap on the 'Sources' icon at the bottom of the screen. This shows the third-party health and fitness apps that I have installed on my iPhone.

The Human and Running apps are basically exercise trackers, which monitor your movement and other activities, while Lifesum is a kind of food diary for



planning meals and monitoring your calorie intake. There's also iHealth, which can be used in conjunction with other devices, such as a blood-sugar monitor, to record important medical data. All these apps can share their data with Health, so that you can view the most important data on the Dashboard.

4. Sharing data

Tap on any of these third-party apps and you'll see a list of all the different types of information that each app can store, and which can be shared with your Health app.

The Lifesum app primarily focuses on dietary information, so the list of information that it records includes details such as your body-mass index (BMI), your daily calorie intake, and even quantities of specific food types such as fats and sugars. Each individual data item has a switch that allows Lifesum to send – or 'write' – that information into Health, so you can tell it to ignore potassium intake and just focus on sugar and fat.

And, of course, other apps can record different types of data. The Nike Running app can monitor your heart rate during exercise, while iHealth can monitor blood pressure and sleeping patterns.



In the US it's already possible for some people to share information with their doctor or hospital, though, it might be a while before those of us in the UK can send health data to our local NHS doctor.

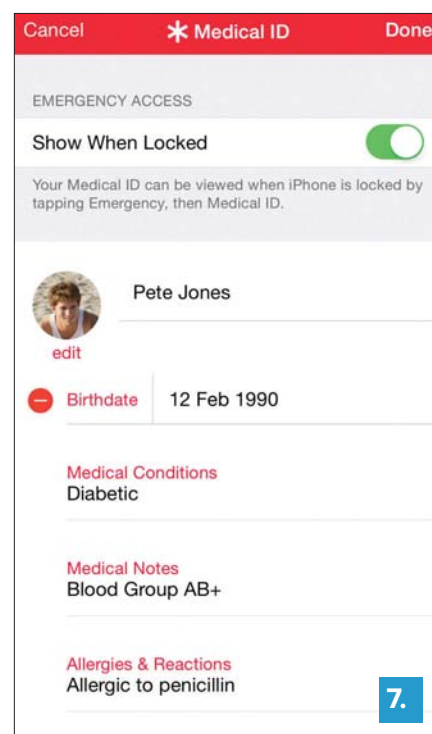
5. Health data

All the data collected by Health and other apps can be displayed on the Dashboard, but then the Dashboard will quickly become cluttered and confusing, so we need a way to organise all the data that is being fed into Health.

Tap on the Health Data icon in the toolbar at the bottom of the screen and you'll see a list of all the different types of data that you can view.

To help keep things simple, the Health app automatically sorts your data into a few main categories. The Body Measurement category includes basic information such as your weight and BMI, while the Nutrition category goes into great detail about your diet, including details such as cholesterol levels and even levels of calcium, copper and other minerals.

There are also categories for monitoring sleep patterns, and even detailed medical tests such as blood alcohol and lung capacity during exercise.



6. The go-between

Tap on any of these items and you'll see the graph of the data that your apps have collected. You can specify which graphs are shown on the Dashboard, and you can also add data manually if you want to monitor details such as your daily caffeine consumption.

The Health app can also act as a go-between for sharing data between apps. You could, for instance, tell Health to draw in your workout data from the Nike Running app and then send that data to Lifesum so you can see whether you've run far enough to make up for the jam doughnut you had at lunchtime.

7. Medical ID

The final feature of the Health app could, quite literally, be a lifesaver. In case of emergency, you can create a 'Medical ID' that displays key medical data on the lock screen of your iPhone. The Medical ID can tell people that you're diabetic, or allergic to penicillin.

It can include details such as your blood group and whether you're an organ donor. There's also an option to add an emergency contact so that your next of kin can be informed if you're taken ill while away from home.



My time with Apple's HealthKit

Macworld contributor Marco Tabini reveals how he got on using HealthKit for a couple of months

I'm a sucker for data. At my day job, I get to help businesses collect and analyse all kinds of information.

During my last health check, my doctor told me that it was time to start monitoring my weight and blood pressure. Naturally, I looked at this as an opportunity to try out HealthKit – something that I had been looking forward to ever since Apple introduced it with the launch of iOS 8. A couple of months in, I'm here to tell you all about my little adventure in the land of smartphone-powered healthcare.

A health-centric shopping spree

Before I could start measuring everything Tabini, I would obviously have to acquire some new gear – namely, a scale and a blood pressure monitor. Luckily, this task

was made somewhat easier by the fact that the list of HealthKit-compatible hardware is not exactly rife with choice.

In the end, I settled for Withings' Smart Body Analyzer (£130), and iHealth's BP7 Wireless Blood Pressure Monitor (£64), both of which are available from Apple's online store (store.apple.com/uk).

As I was shopping, the first thing that I noticed that this modern version of healthcare is a rich person's game: both devices are significantly more expensive than comparable models designed to operate sans smartphone connectivity.

The weight of things

Since the Withings scale arrived at my door first, it was the first device that I installed and set up. Initially, I was taken aback by the documentation that came

with it. The manual that I found in the box was so short on text that it makes an IKEA instruction sheet look verbose.

The scale can either connect to a companion iOS app running on your iPhone via Bluetooth, or directly to a Wi-Fi network; either way, provided that connectivity is handy, the process is almost entirely automated and painless. The only hitch I encountered was that my original choice of installation spot (the inside of a walk-in wardrobe) turned out to be out of network range – a fact previously unknown to me, since I do not typically use my iPhone inside it. Once I moved to my bedroom proper, the scale connected without problem and started working right away.

Besides your weight, the Body Analyzer can measure a number of other

things. These include your body fat/lean mass composition and pulse, the temperature of your room, and the percentage of carbon dioxide in the air. Perhaps most perplexingly, it will also check the weather for you, and let you know if it's raining or snowing outside.

Once you strip away all the gimmicks, the scale works remarkably well. Simply stepping on it starts it up and causes it to go through a cycle that measures all your vitals, lets you know whether you need an umbrella, and then sends everything to your iPhone. Even better, the device can tell different people apart based on the data it collects from them, dispatching the resulting measurements to a different device automatically and making it the perfect family health companion.

The Body Analyzer is also accurate; I compared it against the doctor's own scale and they both came within a few ounces of each other. It's hard to say whether the body composition analysis and CO2 measurements work as well, but they are much less important than providing you with a consistent picture of your weight over time.

The pressure is on

Compared to Withings' picture showcase, iHealth's pressure monitor comes with a nice manual that includes plenty of information and pictures. Unfortunately, these are a bit sparse when it comes to explaining the subtleties of properly positioning the wrist cuff when taking your blood pressure.

Indeed, on my first attempt, the measurements were so high as to warrant a visit to the hospital – hardly a good start. On account of the fact that my eyeballs weren't exploding, I decided to take a trip to YouTube instead (tinyurl.com/ow7bfn6), where I was able to find instructional videos that provided better guidance, and a few attempts later I was able to get reliable readings that did not involve calling 999.

Unlike the Body Analyzer, the BP7 will only connect to an iPhone over Bluetooth, which isn't a big deal, given that you need your iPhone to start the pressure measurements anyway. The problem is

that the device can only pair with a single smartphone, which makes it impossible for two people to share it.

Once you've figured out the correct way to do it, taking your blood pressure is a pretty simple affair. The device even comes with a convenient sensor that helps you appropriately position your arm, and the resulting measurements are about as accurate as my doctor's own pressure-measuring unit.

The proof in the software

Of course, hardware is only half the story, and it's not until I started playing around with the health-centric software available for iOS that the frustrations began.

Both the Body Analyzer and BP7 come with their own apps, and I was dismayed that the two pieces of software insist on keeping their own copy of my measurements, rather than relying on the built-in HealthKit database. They all but required me to sign up for an account on their respective cloud services.

To be blunt, I find this approach pretty invasive. I was hoping that Apple would have put its corporate foot down over these shenanigans, at least when it comes to health data, and prevented vendors who wanted to get on the HealthKit train from attempting to make such brazen grabs for information that is pretty personal in nature.

This seems particularly important when you consider that neither app adds much value to the data that their devices collect. BP7's app simply keeps a running spreadsheet of my blood pressure, and Body Analyzer's makes a feeble attempt at gamifying everything from weight loss to the number of steps you take in a day – which is off-putting to the extreme.

Worst of all is Apple's own Health App, which takes a complex job – storing and visualizing all kinds of data about your health – and makes a substandard job of it. For one thing, the charts it produces are hard to interpret, because it's impossible to tell exactly what value is associated with each data point. Thus, you can more or less 'guess' how your weight has changed over time, but the only way to tell exactly how much you

weigh is to go look at the individual measurements, which are shown as a table in a different screen.

Unfortunately, this detailed view suffers from a fatal defect of its own: it takes longer and longer to load as you accumulate more data.

A mixed bag

Despite these hiccups, my experience with this 'connected' way of managing my health has been positive. During my most recent visit, I was able to show the doctor that my previous high blood pressure measurement was a fluke, and the data from the Body Analyzer and pedometer helped us work on better ways to manage my weight and exercise regimen.

The only disappointment in my little experiment was that, while the hardware performed really quite well, the software side of things seems to be limited to collecting the data and making a half-hearted attempt at visualizing it for you.

Call me cynical, but I don't know what to make of an app that cheers me on while I drudge through an attempt at changing my eating habits. However, features such as the ability to spot unusual (and potentially worrisome) trends, or even just reminding me that I forgot to take my blood pressure on a given day, would be immensely valuable – and also happen to be things that software can do well.

The good news is that these technologies are still in their infancy, and the software is likely to improve with time.

Until then, HealthKit's major advantage over a pencil and a £20 scale is primarily one of convenience; if, like me, you aren't very good at keeping track of minutiae, there's something to be said for the ability to walk into your doctor's office with a full complement of health data at your disposal – it certainly makes for a more productive relationship with your doctor.

If, on the other hand, record keeping is your strong suit, the additional expense connected with acquiring the hardware is unlikely to really give you more bang for your buck than a good old-fashioned spreadsheet.

Health app needs a redesign

Why the interface on Apple's Health app is sorely in need of a redesign

Apple is touting the Apple Watch using three main arguments. The first is that it keeps time and is accurate to within 50 milliseconds. The second is the “fun, spontaneous ways” you can communicate with “your favourite people”. And the third is probably the best selling point, given the way people have used wearables up until now: it offers a smarter way to look at fitness.

I have to agree with that. The trircular interface on the watch's Activity app, which shows how much you move, exercise and stand, is a brilliant design.

However, much of the data will be piped through to the Health app on your iPhone, and the interface of that app is sorely in need of a redesign, even if we do get a separate companion Activity app for iPhone too.

There is a huge disconnect between the simple, intuitive interface of the Apple Watch and the archaic look of the Health app. With nothing but straight graphs lacking easy-to-spot dividers, the Health app displays data in ways that will put off even the most earnest of exercisers.

In addition, while it's not as obvious in this screenshot, it's very difficult to read the above numbers on an iPhone because the thin, white font doesn't offer much contrast. Depending on which type of metric you select, the Health app chooses colours for the dashboard cards. You can't opt for a more readable colour, and the fonts are all white, against a variety of light-coloured backgrounds.

Third-party apps

Other apps make reading data much easier. Using Fitbit's free app, I can see at a glance, in large, readable numbers, what my activity level is, with step counts, distance, calories burned and more. And if I tap on the Step count, I see a weekly

< Steps	All Recorded Data	Edit
72	Mar 10, 12:59 PM	>
65	Mar 10, 12:58 PM	>
73	Mar 10, 12:57 PM	>
62	Mar 10, 12:56 PM	>
55	Mar 10, 12:54 PM	>
52	Mar 10, 12:52 PM	>
94	Mar 10, 12:51 PM	>
106	Mar 10, 12:50 PM	>
78	Mar 10, 12:48 PM	>
88	Mar 10, 12:47 PM	>
Dashboard	Health Data	Sources Medical ID

Unintuitive display Step data in Apple's Health app is not very practical.

view that is still more informative than Apple's. It also lets you set goals, something that is so far absent from the Health app. You can set daily goals, and the colours in the dashboard reflect whether or not you've met them.

The Health app also has an odd way of displaying raw data. For some metrics, this might work – think blood glucose levels, blood pressure, and weight for example. But for steps, it's simply incongruous. Look above (left) at the way you view step data for a given week. It would make sense for this to be grouped by, say, 15-minute intervals. I can't imagine that, for most people, seeing the number of steps per minute would be very useful.

In the absence of a usable dashboard in the Health app, you may want to go for a third-party tool. The FitPort app



Alternatives FitPort is the dashboard that the Health app should have.

(£1.49) pulls in data from the Health app and displays it in a more readable manner. You can set daily goals for each of the metrics it displays, and circles will show you how close you are to those goals. FitPort also gives you much better views of data from past days than the Health app does.

Apple's Health app records a lot of data, but presents it in the wrong way. Different data sources could benefit from different displays and, at a minimum, they could offer more than just straight line graphs. In addition, the choice of white fonts on often light coloured backgrounds makes it hard to read, and the lack of daily goals limits its use. I hope that Apple can reproduce the attractive interface on the Apple Watch in a new version of the Health app for the iPhone.

Declutter your Camera Roll

Leah Yamshon's tips will keep your iPhone's Camera Roll clean and free from unwanted images

My worst iOS habit is hands-down my inability to keep my Camera Roll clean – I never go through it to delete my selfies, random screenshots, or my 49 failed attempts at photographing Tower Bridge at nighttime. (Even worse: I back up everything, so those same terrible photos live in various places on my Mac, too.) It's been an ongoing problem that I can't quite seem to kick, though I think I may finally be on to something: the answer to decluttering my Camera Roll is to clutter up my home screen with more apps. These three photo management apps tackle photo clutter in different ways, and combining the three together into a weekly routine has, so far, started to make a dent in my never-ending pile of photos.

Seriously, you don't need those screenshots anymore

I take at least one screenshot on my iPhone every day, whether to use in an article, to save something for offline viewing or to snap something I want to text to my friends – ridiculous Facebook posts and pics that I want to share and have a good laugh.

But you know what that leaves me with? A cluttered Camera Roll filled with an ugly mess of screenshots that I no longer need, and that have been sitting there untouched for months.

Screeny (79p) filters out these screenshots, so you can easily delete them. It scans through your Camera Roll and grabs all your screenshots, which you can review before batch-deleting the whole lot. You could also delete them one-by-one, or filter them down further by the past 15 or 30 days, if you only want to delete older snaps. That option is a great buffer for making sure you don't accidentally delete something you need.

Screeny's engine is incredibly accurate – it's very good at selecting



only screenshots. But, just to be safe, I always review what the app has selected to make sure that a rogue photo didn't get pulled in by mistake before I hit the final 'Delete' button. That has only happened to me once, but I still take the time to look everything over first. I'd rather not risk deleting my guinea pig photos before I can post them to Instagram.

Revisit your photos one by one

Screeny can't help you deal with your regular photos, so that's where Flic (£2.29) comes in. Flic shows you what's stored in your photo collection – one photo at a time – asking: "Does this really look like a Kodak moment to you?" You decide what stays and what goes in a Tinder-esque fashion – swipe left to send a photo to the trash, or swipe right to keep it around.

With each photo you dump, Flic tells you how much space you've cleared. Flic stores these 'trashed' photos in a special tab until you're ready to actually delete them, so you can take one last look at your pics before you send them into the abyss. And, to keep you from getting photo fatigued, Flic groups your photos together by calendar month, so

you're not sorting through your entire Camera Roll at once.

Review images at a glance

Once you've gone through your photos individually, take a look at your Camera Roll as a whole, and batch-delete duplicates or photos that just aren't keepers. Purrrge can help with that.

I wanted to write off Purrrge (£1.49) as just a gimmicky app to take advantage of everyone's cat obsession, but it's actually a pretty great tool. It has a gesture-based interface, which you use to quickly batch delete photos from your Camera Roll. All of your photo thumbnails are shown on a grid; tap 'Select', and then tap an image to mark it as trash, or swipe across a cluster of images to mark multiple photos at once. You can also look at full-screen versions of your photos one by one, and switch back and forth between similar images to pick the best of the bunch to keep. Swipe up on any full-screen photo to delete it.

When you're ready to trash everything, tap the Purrrge icon at the top of the screen, and you'll finally get to see that cute cat photo that the app promises – that is, if you don't have a zillion cat photos on your phone already.

Fix a cracked iPhone screen

Lewis Painter's five fixes will help you repair a smashed smartphone display

Fix 1: Apple

Apple will come to the rescue and repair your cracked screen, but it won't be free. If your iPhone is in otherwise good condition, you'll be handing over between £86 and £106, but that's only if there's nothing else that deems it as an 'out-of-warranty repair'. If that's the case, the price jumps up to £236 for an iPhone 6.

Fix 2: High street retailers

The High street is a great place to start. It's where most of us will go when we break a handset's display because, generally speaking, we like the personal touch, which is something you tend not to get when using an online repair service. Also, if something does go wrong, you'll know who to complain to.

High street chain Timpsons has noticed the growing demand for a local repair service and have added screen repair services at 412 of its 1409 stores nationwide, starting at only £49.99. This price tag is only for the iPhone 4 and 4s though; the cost rises slightly with each generation of smartphone, with the 5s costing the maximum price of £85 to repair. They don't offer repairs for the iPhone 6/6 Plus either, so if you're in the market for a new 6/6 Plus screen, keep on reading.

While the high street is the obvious option – is it the best option? Timpsons is a well-known name, but using a less-known retailer could be a risky process because when you leave the store, you don't know who's handling your iPhone or what they're doing to it.

People like to keep their private lives private – and what is at the centre of most people's lives? Smartphones. From emails and texts to photos, our digital

world revolves primarily around smartphones. When you take your iPhone to a high street retailer, you're handing over your central hub, so to speak, and there's a small risk that your data could be browsed and even remotely stored. A lack of security regulation in smaller, independent shops could be risky, especially for businesses.

Fix 3: Online repair services

Another option to think about are online repairs services, which are becoming increasingly popular with people who are too busy to take their handset to a shop themselves. MendMyi (mendmyi.com), for example, has become well-known in the UK for its phone repairs and customisation over the past few years – even customising Stephen Fry's iPhone with their Colour Lab service.

With MendMyi being primarily an online service (it has branches in Haverhill, Cambridge and Sudbury), you'll have to rely on the postal service to send and receive your iPhone. The real question is – how safe is it? People are often wary about sending their handset off in the post to a company that they've found online. What if it breaks? MendMyi offers an additional 'Express Pickup' service that insures your iPhone in transit.

It also uses official Apple parts only in the repair, so you can be sure that your screen replacement is genuine. Its engineers will also run a diagnostics test on your phone while it's being repaired to make sure nothing else is wrong with it.

So, what's the downside? When it comes to pricing, MendMyi isn't cheap – while an iPhone 5s screen repair costs a reasonable £87 an iPhone 6 display will set you back £287. While that may



be more expensive than its competitors, the service aims to have your phone diagnosed and repaired within one- to three days, and it is couriered back to you shortly afterwards.

Another online repair service to think about is iSmash, which is based in London. You can select the repairs you need on its website, along with your choice of postage, whether it be them sending you a 'Post in Pack' for £5.99 or you directly organising a courier. Its pricing is also similar, with an iPhone 5s screen repair costing slightly more than MendMyi at £99. Interestingly, iSmash only charges £145 for an iPhone 6 screen repair – almost half the price of the same service at MendMyi.

The High street is a great place to start. It's where most of us will go when we break a handset's display because we like the personal touch



Apple Store

Fix 4: Home repairs

If you can't wait for days for your iPhone's screen to be fixed there are other options. Depending on your location, there are companies that can come to you and repair your phone. One such service is Phone Dudes (phonedudes.co.uk), which will come to you anywhere within Zone 1 of London and repair your broken iPhone screen.

You set the time and date, so there's no waiting around all day. Amazingly, Phone Dudes claims that once the engineer arrives, your iPhone will be ready to use again within just 10 minutes.

The company has a Twitter account where its staff can answer any questions

you have about the service. It's also where you can find feedback from customers, with many commenting about how they've booked an appointment in the morning and had it repaired by the afternoon of the same day.

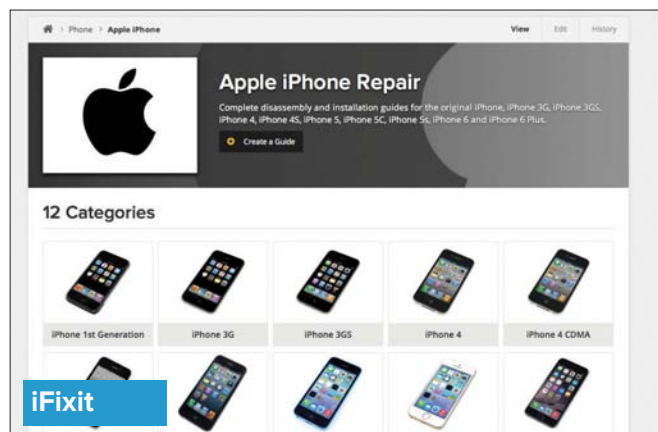
Phone Dudes also uses official Apple parts and repairs range from a more modest £69 to £120 for iPhone 4- to 6. However, it's worth noting that there's currently no official support for the 6 Plus.

Fix 5: DIY repairs

If your screen damage is more cosmetic, there are other DIY options available. The internet is full of home remedies for scratches (not cracks) on a screen. Your

options include car scratch removal creams, such as the 3M Scratch. Make sure all ports are sealed before using creams, as you don't want to add liquid damage to your list of problems.

There's one more option, though, it's not for the faint-hearted. iFixit (ifixit.com) is an online service that provides tutorials on how to repair any part of any iPhone. You'll find clear and easy-to-follow steps, with high-resolution images highlighting exactly what you need to do. It's also an online store, so once you've found the tutorial you need, you can buy all the parts directly from iFixit, negating the risk of you buying the wrong parts.





Back up your iPhone

Martyn Casserly shows how to keep your iPhone's contacts, photos and data safe

Backing up is easy to do (sorry), and it's also incredibly important – if we had to give three pieces of advice to iPhone owners, they would be back up, back up, back up. So listen up, as we explain how to back up an iPhone.

Why backing up is so important

Our iPhones are one of the most important possessions we have. Putting aside their financial worth, these little slabs of silicon and glass have become the central repositories for our memories, be they photographs of once-in-a-lifetime events or important documents. Making sure that this precious data is backed up somewhere is a crucial safeguard against theft, damage, or leaving our worlds behind on the back seat of a taxi. Then, of course, there's the more joyous occasions of upgrading to a newer model and being able to transfer all of your data quickly and simply by using a backup.

Thankfully there are many ways to store your information on the web or your Mac, all of which are free and easy to use.

Apple's iCloud service means your iPhone can constantly sync important data with web-based servers, and iTunes also offers a simple one-click backup facility. And there are several third-party services that offer a variety of options these days. As a safety precaution, we recommend using at least two of the available solutions, because if the worst happens and your iPhone backup is somehow corrupted, you'll have another version to fall back on.

Each Apple ID has 5GB of storage available, in which you can store bookmarks, contacts, calendars, iCloud documents, mail message, notes, and your iCloud photo library. If you take lots of pictures and videos, you may need to upgrade the storage capacity, as it will fill up quickly. Apple offers 20GB for 79p per month, up to 1TB for £14.99 per month.

While iCloud backups are very handy, they're best used in conjunction with iTunes, to cover all bases. iCloud backups are very easy to set up and once done they will automatically run in the background each time your device is plugged in and on a Wi-Fi connection.

To create and use iCloud backups you'll need an iCloud account, which are usually created when you first set up your device. On your iPhone go to *Settings* → *iCloud* → *Backup* and you'll see the option to toggle on iCloud Backup. That's it, you're good to go. Now your phone will automatically look after your data without any need for you to get involved.

Use Mac and iTunes

Having a local backup is always a good idea, as it means you at least know that you have a copy that you control, rather than trusting to the all-powerful cloud.

Making a local backup is very easy thanks to that old favourite iTunes. Years

ago you would have regularly plugged your iPhone into your PC to sync music, but with the advent of iTunes Match it's maybe fallen a little out of favour. iTunes still remains a very useful piece of software, though, and will give you a complete backup in a matter of minutes.

First off, plug a connector cable into your Mac or PC and then your iPhone. In the top left-hand corner, under the play controls, you'll see a little icon of a phone appear: click this and you'll be taken to the menu for your device. Ensuring that Summary is selected in the left-hand column, you'll now have three boxes in the main pane, the middle of which is entitled Backups.

There are two main sections – automatic and manual – and the iPhone is usually set to automatically back up to iCloud. If you prefer that each time you connect your phone to the Mac it immediately creates a new, locally stored backup, then click the 'This computer' option below.

Moving over to the right-hand side of the box, there is the option to create a backup manually. Clicking the 'Back Up Now' button will do exactly that, with the length of time it takes dependant on how full your phone's storage is at that moment. Next to this is the Restore from Backup option, which is where you would head if you wanted to reinstall everything after replacing your iPhone.

You may be asking yourself exactly what is included in the backup? Any photos currently on the device will be stored, as will contacts, calendar accounts, Safari bookmarks, notes, call history, profiles, and several other types of data. Apple has an extensive list of all the things contained in a backup, which you can read [here](#).

The iTunes backup doesn't make extra copies of any media files, though, so films, music, and apps bought from iTunes will need to be downloaded again from the site or your PC.

Create an encrypted backup in iTunes

There is one additional type of backup available in iTunes, which is an encrypted



one. If you have sensitive data on your phone or are safety-minded, then this option will give you an added layer of security by making the backup accessible only through a password that you'll be prompted to create.

Remember, though, that this password will not be known to Apple, so if you forget what it is, your backup will become useless. Due to the extra security levels of an encrypted backup, Apple adds additional data which is withheld from the standard version. This includes information from the Health app, alongside your password keychain.

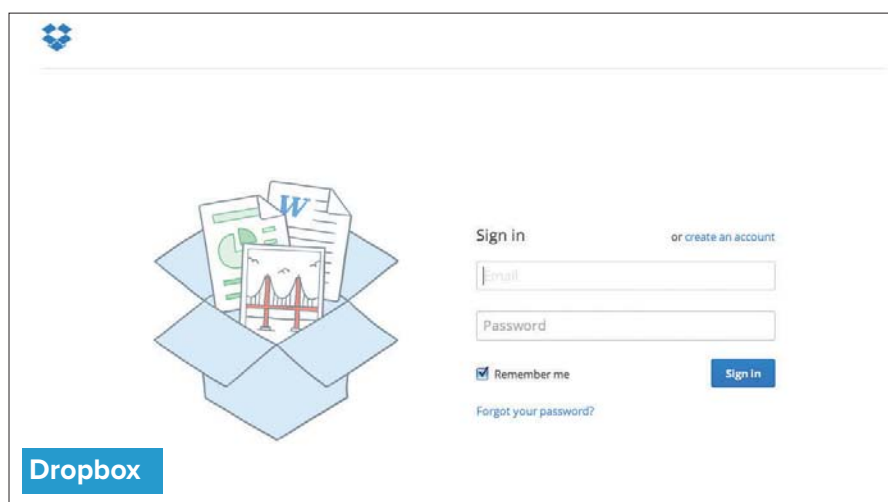
Use third-party backup services

There's a sage piece of advice in security circles that states: "If something is only backed up once, it isn't backed up at all."

Creating multiple copies of data is the only way to really guarantee that it won't get lost in the case of an accident.

Signing up for free accounts with Dropbox, Flickr, Google Drive, OneDrive, or one of the many other options around gives you an easy way to keep your photos and documents safe without too much effort. Pretty much all of them offer automatic syncing, and it won't interfere with iCloud.

So download one, or a few of the apps, follow the instructions, and you'll have another safety net running in the background. One word of warning, though. Be sure to check the settings for each app, and slide the Use Cellular Data option to off, otherwise you might get a nasty surprise when your next phone bill arrives.



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Complete guide to Apple devices

EVERYTHING YOU NEED TO KNOW ABOUT MACS, IPHONES, IPADS, IPODS AND OTHER APPLE PRODUCTS

Welcome to *Macworld's* in-depth guide to every Mac, iPad, iPhone and iPod that Apple makes, as well as other hardware and software that comes out of Apple's HQ in Cupertino, California. The first two pages offer a quick summary, with detailed looks on the following pages.

Apple makes six different kinds of Mac, and each has subcategories and variations in specs and features. Some Macs are faster and more

powerful, while other Macs have slower processors but are cheaper. This guide should help you identify which Mac best suits your needs.

There are now four different iPhones and five iPads to choose from, along with a collection of iPods and the Apple TV. Plus, we should soon see the launch of the Apple Watch. Read on to understand every product that Apple makes.

MacBook Air

The MacBook Air is Apple's ultrathin and incredibly light laptop, sometimes referred to as an ultrabook. It comes in two screen sizes, 11in and 13in. Apple's cheapest MacBook Air costs £749. The range was updated in March 2015.



MacBook Pro

There are two types of MacBook Pro available: a MacBook Pro with a high-resolution Retina display and flash storage (introduced in 2012), and a simple MacBook Pro that is the only Mac to feature a CD/DVD drive (the model hasn't been updated since 2012). There are two screen sizes of MacBook Pro available: a 13in and a 15in. It is a more powerful machine than the MacBook Air, but the prices are a lot closer than they used to be. The cheapest MacBook Pro costs £999.



MacBook

More information to be released in the next issue...



Mac mini

The Mac mini is a compact desktop computer measuring less than 20x20cm and is Apple's cheapest Mac, starting at just £399 – the same price as a 16GB iPad Air 2. It features an HDMI port, which makes this computer a popular option for a home media centre as you can plug it directly into your TV screen.

Mac Pro

The Mac Pro is Apple's professional Mac with a price tag to match – it starts at £2,499. It's a fully fledged workstation aimed at those who need the ultimate in power.



iMac

The iMac is incredibly thin, with the whole computer concealed behind the gorgeous display. There are two different sizes of iMac available: the 21.5in and the 27in. The cheapest iMac costs £899, but there is also a 27in 5K Retina iMac available for just under £2,000.



iPad Air

The iPad Air is Apple's biggest tablet. There are two models, both with a 9.7in Retina display: the original iPad Air, launched in 2013, and the iPad Air 2 with Touch ID, released in October 2014. The newer model is thinner, faster and more powerful, and there is a gold finish available as well as the original black and silver variants. The older iPad Air costs £319 (16GB) or £359 (32GB).

The iPad Air 2 costs £399 (16GB), £479 (64GB) or £559 (128GB). You can buy an iPad with just Wi-Fi or with Wi-Fi and cellular coverage – add £100 to get the price with cellular coverage.



iPhone 6 Plus

The new iPhone 6 Plus is Apple's first phablet-style phone. Phablet is the name used for phones that are so big that they are like small tablets. The



iPhone 6 Plus has a 5.5in screen, so it's really not very much smaller than the iPad mini. In addition to the bigger, better screen, the iPhone 6 Plus comes with a better camera than the iPhone 6. Prices start at £615 for the 16GB version; the 64GB version costs £699 while the 128GB iPhone 6 Plus costs £789.

iPhone 5s

The 5s is the iPhone that Apple introduced in September 2013. It's available in gold, silver or grey and has a Touch ID button allowing fingerprint scanning for security, rather than the older-style home button with a square in the middle. The Touch ID button is the most obvious difference. Apple is now selling only 16GB (£459) and 32GB (£499) models of the iPhone 5s.



iPad mini

Apple sells three different iPad mini tablets. There's the original iPad mini, first launched in 2012 and now available for £199 (16GB). There is the iPad mini 2, launched in 2013, which costs £239 for the 16GB version, or £279 for 32GB.



And there is an iPad mini 3, launched in October 2014 and starting at £399 for 16GB, £399 (64GB) and £479 (128GB). All three models are of a similar size with 7.9in screens. The original iPad mini lacks a Retina display, and only the iPad mini 3 offers Touch ID. Like the Air, you can pay £100 more to get a cellular version so that you can surf using 3G or 4G.

iPhone 6

The iPhone 6 has a bigger screen than the iPhone 5s: 4.7in (measured diagonally, corner to corner) compared to the 4in of the 5s. The iPhone 6 is also thinner and lighter than the previous year's model. Like the iPhone 6 Plus, the iPhone 6 also comes equipped with a better A8 processor and an NFC chip for mobile payments. It costs £539 (16GB), £619 (64GB) or £699 (128GB).



iPhone 5c

The iPhone 5c has a polycarbonate (plastic) shell that is available in six bright colours. Apple released the iPhone 5c alongside the iPhone 5s in September 2013. On the inside the 5c is pretty similar to the iPhone 5, although the camera on the 5s is a better model. Apple sells an 8GB iPhone 5c for £319.



iPod

When Apple introduced the iPod in 2001, it started a revolution that eventually ushered in the iPhone and the iPad. The original iPod is now long gone, and the company no longer sells the iPod classic, which was most like the original. However, you can still buy a number of different iPods. There's the iPod touch (from £159), which is as close as you can get to an iPhone without the phone, the iPod nano (£129) and the iPod shuffle (£40). The original iPod was a music player that famously allowed you to carry 1,000 songs in your pocket. Today's iPod touch lets you watch videos and download apps from the iOS App Store. The iPods haven't been updated since 2012 (except for a small tweak to the iPod touch in 2013).



Apple TV

The Apple TV is a 10cm square box that measures less than an inch high. You plug the device into your HDTV so that you can watch movies and TV shows from the iTunes Store. You can also play content from Netflix (for a £5.99 a month subscription), view videos on YouTube and Vimeo, and stream music and photos from iCloud. You can also view whatever is on your iPhone, iPad and iPod touchscreen, and push content from your Mac to your TV screen. The Apple TV costs £79, but the hardware hasn't been updated since 2012.



iWatch

Apple unveiled its first foray into wearable technology in September 2014, and six months later it's ready to launch. There will be 38 different Apple Watches available – thanks to the combination

of the three different Apple Watch categories, two different face sizes, and the accompaniment of straps. Apple has said that Apple Watch prices will start at £299 for the 38mm Apple Watch Sport or £339 for the 42mm version. The Stainless Steel Apple Watch will cost from £479, while the 18-carat gold Apple Watch Edition will cost from £8,000.



MacBook Air

APPLE'S THINNEST, LIGHTEST LAPTOP

There are four standard MacBook Air models available, in two sizes. Each MacBook Air offers a 1.6GHz dual-core Intel Core i5 processor, 4GB of RAM and Intel HD Graphics 6000 as standard.

There are also build-to-order options that let you add a faster Intel processor (the 2.2GHz dual-core i7, for £130), more storage (512GB SSD for £240) and 8GB of RAM (for £80).

The only real differences between the different models are the size of the screen, the amount of storage and battery life. Both the 11in and 13in MacBook Air offer either 128GB or 256GB SSD options. The 11in MacBook Air offers nine hours of battery life, compared with the 12 hours of the 13in MacBook Air. The 11in MacBook Air weighs 1.08kg and its dimensions are 30x19.2cm. The 13in MacBook Air weighs 1.35kg and its dimensions are 32.5x22.7cm. Both models are just 1.7cm thin at the edge and taper to 3mm at the front.

Because of its smaller screen, the 11in MacBook Air offers fewer pixels than the 13in model – up to 1366x768 at a 16:9 aspect ratio, compared with 1440x900 at a 16:10 aspect ratio on the 13in. That display doesn't come close to what you get from the 13in MacBook Pro Retina model, though – that Pro offers 2560x1600 Retina resolution at 227 pixels per inch.

The two Airs have different aspect ratios. The 11in model is the only Mac with a 16:9 ratio – the same as a widescreen TV. Some people find the narrower screen more restrictive. The MacBook Air doesn't have a great many

ports – that's the trade-off required for such a remarkably thin computer. There's no ethernet port, for example, so if you want to plug it into a wired network at work or on holiday, you'll need to buy an adaptor. However, the MacBook Air does offer built-in 802.11ac Wi-Fi, so it's unlikely that in today's wireless world you will ever need to plug it into a network anyway.

The MacBook Air also lacks an optical drive – the only Mac still to feature a CD/DVD drive is the MacBook Pro (the non-Retina model). We don't find we have much use for an optical drive these days, but if you really think you need one there is always the option of purchasing Apple's USB SuperDrive for £65.

There are two USB 3 ports, and you can also connect accessories (including external storage and monitors) to your MacBook Air via its Thunderbolt port, Apple's high-speed connector. Thunderbolt 1 is slightly slower than the Thunderbolt 2 ports on the Retina MacBook Pro, but still faster than USB 3 (20Gb/s for Thunderbolt 2, compared with 10Gb/s for Thunderbolt 1 and 5Gb/s for USB 3). The 13in

MacBook Air comes with an SDXC card slot, but the 11in model doesn't.

Speed

The MacBook Air is one of the slowest Macs around – along with the £899 iMac and the £399 Mac mini. However, one of the MacBook Air benefits is its solid state drive (sometimes referred to as flash), which speeds up operation. Flash memory is superior to a hard drive because it is faster at reading data. This makes a huge difference when running your Mac: opening documents, starting applications and even booting up all happen much faster. The iMac and Mac mini both use a slower hard drive.

Whether all that matters to you depends a lot on what you will be doing with your computer. If the majority of what you do on your Mac is everyday tasks, such as sending and receiving email, browsing the web and using office applications, then the MacBook Air is quite capable of meeting your needs. You can also happily use it for editing short videos or working with photos.

Price

There are four standard versions of the MacBook Air available and various build-to-order options that you can add on a point of purchase.

Prices

11in MacBook Air 1.6GHz (128GB) £749
11in MacBook Air 1.6GHz (256GB) £899
13in MacBook Air 1.6GHz (128GB) £849
13in MacBook Air 1.6GHz (256GB) £999

Build-to-order options

2.2GHz dual-core Intel i7 £130
8GB RAM £80
512GB flash storage £240

We recommend that you purchase the extra RAM when you buy the MacBook Air as it cannot be upgraded later. If you feel you need more storage, you could buy an external hard drive or an NAS drive to store content on and back things up when necessary.



MacBook Pro

A SUPERIOR MAC LAPTOP WITH A DISPLAY TO MATCH

There are five standard Retina MacBook Pro models available, in two sizes, as well as a non-Retina MacBook Pro, which we will cover at the end of this article. In March 2015, Apple updated the 13in models but not the 15in ones.

The key selling point with the five is the Retina display, so called because it delivers maximum optical quality – the human eye is unable to distinguish any more pixels. That makes a Retina display about as precise as you can get, ideal for creative work.

The 13in model offers 2560x1600 Retina resolution at 227 pixels per inch, while the 15in model offers 2880x1800 resolution at 220 pixels per inch.

Unlike the MacBook Air range, the five Retina MacBook Pro models are substantially different in terms of spec, with the 15in models being equipped with quad-core i7 chips (2.2GHz or 2.5GHz), 16GB of RAM and more. The three new 13in Retina MacBook Pro units offer a dual-core Intel Core i5 processor (2.7GHz on two models, and 2.9GHz on the high-end version), 8GB of RAM, and Intel Iris graphics as standard.

The 13in models are available with 128GB, 256GB or 512GB flash storage, while the 15in models skip the 128GB version, offering only 256GB or 512GB.

There are various build-to-order options for the 13in models that allow you to add a faster Intel processor (a 3.1GHz dual-core i7, for £170), more storage (1TB SSD for £400) and 16GB of RAM (for £160).

The build-to-order options available for the 15in models include a faster 2.8GHz quad-core i7 Intel processor for £150, and 1TB storage for £400. It's worth remembering that the 2.8GHz clock speed of i7 Intel upgrade doesn't mean that the chip is slower than the 3.1GHz dual-core processor offered with the 13in MacBook Pro Retina model: it's an i7 and it's a quad-core, so it will be faster.

One of the key distinctions between the MacBook Air range and the MacBook Pro Retina models is battery life. The 11in MacBook Air offers nine hours of battery power and the 13in MacBook Air offers 12 hours. This compares with nine hours for the 13in MacBook Pro Retina, and eight hours for the 15in Retina model.

The other significant difference between Apple's laptop ranges lies in their weight and dimensions. The 13in Retina MacBook weighs 1.57kg, compared with the 1.35kg of the 13in MacBook Air. However, the dimensions of the 13in Retina MacBook are 31.4x21.9cm compared with 32.5x22.7cm for the MacBook Air – so the 13in Air is a slightly larger unit.

The 13in MacBook Pro isn't very much thicker than the MacBook Air either, measuring 1.8cm, while the Air is just a centimetre thinner, measuring 1.7cm at its

thickest point (though it slims to 3mm at the front edge). The 15in MacBook Pro with Retina display measures 35.9x24.7cm and weighs 2.02kg. It's the same thickness as the 13in model at 1.8cm.

The MacBook Pro with Retina display has a few more ports on offer than the MacBook Air. Like the MacBook Air, the MacBook Pro Retina doesn't feature an ethernet port, but it does have built-in 802.11ac Wi-Fi, and if you need to plug into a wired network you will be able to buy an adaptor separately.

There are two USB 3 ports, but you can also connect accessories (including external storage and monitors) to your Retina MacBook Pro via the two Thunderbolt 2 ports (that's one more than on the MacBook Air, which uses the slower Thunderbolt 1). Thunderbolt is Apple's high-speed connector, which is faster than USB 3 (20Gb/s compared with 5Gb/s). You can buy various adaptors that let you plug FireWire 800 hardware, for example, into this port.

You will also find an HDMI port (for plugging into your TV) and a SDXC card slot (for your camera's memory stick) on both Retina MacBook Pro models.

If you are looking for a Mac capable of playing a DVD or CD, then you may want to look at the MacBook Pro without Retina display (see below), or buy a £65 SuperDrive separately. The new 13in MacBook Pro models come with Apple's ForceTouch trackpad, which will change the way you interact with your Mac.

Speed

The 13in MacBook Pro Retina is faster than the MacBook Air, so if it's the fastest 13in MacBook you want then it's worth spending a little more on the Retina display model.

However, if you want the fastest Retina MacBook Pro, you really need to look at the 15in models. The 13in models have a dual-core processor, while the 15in models have a quad-core processor, and right up at the top of the range the 15in MacBook Pro with Retina display features a Core i7 2.5GHz processor.



Price

There are five standard versions of the Retina MacBook Pro plus a range of build-to-order options that you can add on to your unit at the time that you purchase it. You can also purchase the MacBook Pro without Retina display, but we will deal with that unit separately, below.

Prices

13in Retina MacBook Pro 2.7GHz i5 (128GB)	£999
13in Retina MacBook Pro 2.7GHz i5 (256GB)	£1,199
13in Retina MacBook Pro 2.9GHz i5 (512GB)	£1,399
15in Retina MacBook Pro 2.2GHz i7 (256GB)	£1,599
15in Retina MacBook Pro 2.5GHz i7 (512GB)	£1,999

Build-to-order options

13in Retina MacBook Pro

3.1GHz dual-core Intel i7 £170

16GB RAM £160

1TB flash storage £400

15in Retina MacBook Pro

2.8GHz quad-core Intel i7 £150

1TB flash storage £400

If you think that you might need the extra RAM in your 13in Retina MacBook Pro, then we recommend that you purchase the extra RAM when you buy the Mac as it cannot be upgraded subsequently. If you feel you need more storage, you could buy an external hard drive or an NAS drive to store content on and back things up when necessary.

Non-Retina MacBook Pro

As we mentioned at the start, the non-Retina MacBook Pro is the only Mac to offer an optical drive; it is also the only Apple laptop to still use a hard drive. The non-Retina MacBook Pro hasn't been updated since 2012 and many have been predicting its demise. That it still lives on is testament to the fact that there are people out there who want a Mac with a CD/DVD drive and a big hard drive. It offers a 2.5GHz dual-core Intel Core i5 processor, 4GB of RAM, a 500GB hard drive, and costs £899.

Mac mini

A TINY DESKTOP THAT'S APPLE'S CHEAPEST MAC

Two years after Apple last updated the Mac mini, it revamped its entry-level Mac and lowered prices. That October 2014 revamp resulted in three models of Mac mini.

The cheapest of the three Mac mini models has the same 1.4GHz dual-core processor and integrated graphics chip to be found on the MacBook Air and the entry-level iMac, so it's no surprise that the new Mac mini's processor and graphics performance is close to that of the current MacBook Air and practically identical to the new £899 iMac. The MacBook Air has the edge due to its flash storage, while the Mac mini and iMac still feature a hard drive as standard.

The other two Mac minis offer Intel dual-core i5 2.6GHz and 2.8GHz processors with Intel Iris graphics. These chips are comparable to the processors inside the 13in Retina MacBook Pro, but, as with the MacBook Air, you can expect their faster flash storage to give these models a performance boost.

The Mac mini offers Intel i5 dual-core processor options as standard. There are i7 processors available at point of sale, but these are still only dual-core. Apple's previous generation of Mac mini models offered better, quad-core processors.

You can get a 2TB Fusion Drive for an extra £80 when you buy the £799 Mac mini, taking the price to £879. Only the top-of-the-range model offers this option.

The 2012 Mac mini server version offered a 2TB hard drive, which made it a popular choice among those looking for a media server, so Apple's decision to offer this 2TB Fusion Drive is probably a reaction to this.

The Mac mini weighs 1.22kg and its dimensions are 19.7x19.7cm. Its height is just 3.6cm.

The Mac mini's HDMI port makes it very popular for those wishing to set up a Mac media centre in their living room. This is despite the fact that the Mac mini lacks an optical drive – the only Mac that still features one is the MacBook Pro (the non-Retina model). There's not much call for an optical drive these days, but if you really think you need one there is always the option of purchasing Apple's USB SuperDrive for £65.

You will also find four USB 3 ports, an SDXC card slot, two Thunderbolt 2 ports and an IR receiver. The Mac mini used to offer a FireWire 800 port, which will be important to those who have previously made big investments in FireWire peripherals, although you could purchase a Thunderbolt to FireWire adaptor and continue to use your FireWire devices (there are two Thunderbolt 2 ports on the Mac mini, offering a throughput of 20Gb/s). The only Mac that still offers FireWire is the non-Retina MacBook Pro.

Another reason why the Mac mini has been a popular choice was the ease with which it could be upgraded. RAM, for example, could be slotted simply into place – unheard of in the majority of current Macs. Unfortunately this is no longer an option with the latest models, and you have to add extra RAM at the point of purchase if you think you will need it.

In the past the Mac mini has been pressed into service as a graphic designer's workstation, a home media centre for the family and even a web server for hosting entire commercial websites. However, the latest changes make this model more suited for consumers looking for the cheapest Mac available.

Speed

The Mac mini is not one of Apple's fastest Macs. The processor is comparable to the MacBook Air's, but the mini is scuppered by its slower hard drive. However, you could upgrade your Mac mini to a Fusion Drive for another £200, bringing the benefit of a faster flash drive combined with 1TB of standard storage. It's a setup that could deliver you a surprisingly speedy Mac for just £599.

The big disappointment with the current range of Mac mini models is that they lack the processor performance of the



previous models, first introduced in 2012. The October 2014 update saw the departure of quad-core processor options, for example. In our Geekbench tests we saw a very small increase in single-core mode, but the new top-of-the-range model scores just 56% of the older top-of-the-range model's speed when it came to multi-threaded applications. At least in terms of graphics processing the new Mac minis take the upper hand, benefiting from newer integrated graphics chips.

Price

There are three Mac minis available, with a few build-to-order options that you can add on at point of purchase.

Prices

Mac mini 1.4GHz dual-core i5 (500GB) £399
Mac mini 2.6GHz dual-core i7 (1TB) £569
Mac mini 2.8GHz dual-core i7 (1TB Fusion drive) £799

Build-to-order options

3GHz dual-core Intel i7 £160
16GB RAM £160
1TB Fusion Drive £160
256GB SSD £160
512GB SSD £240

If you think you might need the extra RAM we recommend you purchase it when you buy the Mac mini. It used to be possible to upgrade the RAM in a Mac mini but this is no longer possible as it is now soldered on. We would recommend the Fusion Drive option as the SSD part of the storage will speed things up considerably, while the extra capacity of the drive is likely to come in handy. If you are setting the Mac mini up as a home media centre you may want an optical drive, but you can always purchase a SuperDrive for £65, and continue to play DVDs and CDs that way.



iMac

APPLE'S SUPER-THIN, ALL-IN-ONE DESKTOP COMPUTER

You may think the iMac was only recently updated, with the 5K Retina iMac in October 2014 and the new entry-level model in June 2014, along with lower prices across the range. However, the rest of the iMac range has not been updated since September 2013.

The iMac line-up includes three 21.5in models and two 27in.

The £899 entry-level 21.5in iMac has a 1.4GHz dual-core i5 chip, 8GB of RAM and a 500GB hard drive. Next up is an iMac that for another £150 gives you a faster 2.7GHz i5, 8GB of RAM and a 1TB hard drive. For another £150, the top-of-the-range 21.5in iMac offers a 2.9GHz i5, 8GB of RAM and a 1TB hard drive.

The 27in iMacs also offer quad-core i5 chips, which will deliver more power than the smaller iMacs. The entry-level 27in iMac has a 3.2GHz quad-core i5 processor, and the top-of-the-range iMac offers a 3.4GHz version. Both models have 8GB of RAM and a 1TB hard drive.

Then there is the 27in Retina model, which offers a 3.5GHz quad-core i5 processor with 8GB of RAM as standard (you can add 16GB or 32GB of RAM and a 4GHz quad-core i7 at point of purchase for a price), plus a Fusion Drive as standard. It will cost you £1,999 – more than double the price of the entry-level model, and even more if you spec it to the max.

You may be wondering why the iMacs don't yet feature SSD flash drives (with the exception of the Fusion Drive in the Retina iMac). So are we. Luckily, there are various build-to-order options which allow you to add Fusion Drives and flash storage, as well as up to 16GB of RAM, and faster processors (3.1GHz dual-core i7, for £160 on the 21.5in; 3.5GHz dual-core i7, for £190 on the 27in). Flash storage options include 256GB SSD for £160, 512GB SSD for £400, and a Fusion Drive (which combines flash storage with a hard drive) for £160. The Fusion Drive is a great solution, allowing you to benefit from more storage capacity and a faster experience.

The only upgrade options on the entry-level £899 iMac are the Fusion Drive (£200) and other SSD options.

The graphics cards are another differentiator between the different iMacs. The £899 model features the Intel HD 500 found in the MacBook Air, the next model up has an Intel Iris Pro, while the top-of-the-range 21.5in iMac features the nVidia GeForce GT 750M. The 27in models offer the nVidia GeForce GT 755M and nVidia GeForce GT 775M.

Where the £899 iMac has the exact same processor and graphics as the MacBook Air, the other iMacs are more like the Retina MacBook Pro. Obviously the need for portability may play a big part in a choice between the two. Remember that if you choose a laptop, you can always plug it into your screen when you are at your desk.



Wondering how much space it will take up on your desk? The 21.5in iMac measures 52.8x45cm. The 27in iMac dimensions are 65x51.6cm. The screen is just 5mm thick. The base of the stand is 17.5cm deep on the 21.5in and 20.3cm on the 27in. The iMacs weigh 5.68kg or 9.54kg, so we don't recommend carrying them around.

The iMac offers an SDXC slot, USB slots, Thunderbolt 1 ports, 802.11ac Wi-Fi and ethernet. The Retina iMac is the only one with Thunderbolt 2.

There is no optical drive. Apple traded in the built-in SuperDrive when it slimmed down the monitor to a superthin 5mm. If you really think you need one, you can always buy Apple's USB SuperDrive for £65.

Speed

The Retina iMac is one Apple's fastest Macs, and comparable to the Mac Pro. In fact, we would prefer the Retina iMac thanks to its gorgeous 5K Retina display (an equivalent display would cost around £1,500 extra for the Mac Pro).

Among the 2013 models still available, the top-of-the-range standard 27in model is still a pretty fast Mac, although the 15in Retina MacBook Pro was slightly faster when we tested it, and so was the Mac Pro, as you would expect. However, it is likely that it is the hard drive that slows down this generation of iMacs, so if you add a Fusion Drive you will be giving your iMac a huge boost.

The entry-level £899 iMac is one of the slowest Macs around. Those purchasing one should upgrade it with a £200 Fusion Drive – which combines an SSD with a hard drive – as this will make a much bigger impact than spending £150 to get the 2.7GHz iMac.

There is also quite a leap from the 21.5in iMac models to the 27in models. This isn't surprising as the 27in iMacs are aimed at the power user, and have a price to match.

Price

There are five iMac models available, with a few build-to-order options that you can add on at point of purchase.

Our top iMac recommendation is that you buy a Fusion drive or an SSD as a build-to-order option. The iMac line-up is let down by the hard drives they are equipped with as standard. We expect that the next generation of iMacs will use flash storage, just as the Mac Pro does.

It's also worth updating a 21.5in model at the same time as you purchase one so that it takes 16GB of RAM rather than the 8GB supplied as standard – it's not possible to update the RAM at a later date. However, the 8GB of soldered-on RAM on the entry-level 1.4GHz iMac cannot be upgraded at all, even at point of purchase. Accordingly we would recommend the Fusion Drive option on this model even more highly than for the others as it will speed performance up considerably.

Prices

21.5in iMac 1.4GHz (500GB) £899
21.5in iMac 2.7GHz (1TB) £1,049
21.5in iMac 2.9GHz (1TB) £1,199
27in iMac 3.2GHz (1TB) £1,449
27in iMac 3.4GHz (1TB) £1,599
27in iMac Retina 3.5GHz (1TB Fusion drive) £1,999

Build-to-order options

3.1GHz quad-core Intel Core i7 £160 (21.5in only)
3.5GHz quad-core Intel Core i7 £190 (27in only)
4GHz quad-core Intel Core i7 £200 (Retina iMac only)
16GB RAM £160
32GB RAM £480 (27in only)
3TB hard drive £120 (27in only)
1TB Fusion Drive £160
3TB Fusion Drive £280 (27in only)
256GB SSD £160
512GB SSD £400
1TB SSD £800 (27in only) £640 (Retina)

Mac Pro

APPLE'S PROFESSIONAL WORKSTATION

Having neglected the Mac Pro for a few years, Apple eventually updated the line-up at the end of 2013. That leaves us with two standard Mac Pro models – a quad-core 3.7GHz Intel Xeon E5 (£2,499) and a six-core 3.5GHz Intel Xeon E5 (£3,299).

As well as sporting more cores and a different processor, the top-of-the range Mac Pro also features 16GB of RAM (rather than 12GB) and faster graphics cards – the Dual AMD FirePro D500 with 3GB of GDDR5 VRAM each (rather than the Dual AMD FirePro D300 with 2GB GDDR5 of VRAM). These are dual graphics cards, one of the selling points of the Mac Pro.

Apple claims that with the additional power, users will be able to “seamlessly edit full-resolution 4K video while simultaneously rendering effects in the background – and still have enough power to connect up to three high-resolution 4K displays”.

Both standard units also feature 256GB flash storage, with build-to-order options for 512GB or 1TB of flash storage.

Those buying the Mac Pro will be choosing from the various build-to-order options, of which there are many. Choices include a 12-core 2.7GHz processor, 64GB of RAM, a 1TB flash drive, and the Dual AMD FirePro D700 GPUs with 6GB of GDDR5 VRAM. If you were to build the ultimate Mac Pro, it would cost £7,299.

Wondering how much space the Mac Pro will take up on your desk? The Mac Pro has a diameter of 16.7cm and is 25.1cm tall. It weighs 5kg, a fraction less than the 21.5in iMac. The old aluminium Mac Pro is a giant in comparison.

The Mac Pro offers six Thunderbolt 2 ports – that's enough to drive three 4K displays or six Thunderbolt displays, if you wanted to. You'll also find dual gigabit ethernet – two ethernet controllers, each connected to its own lane, ensuring that there is enough bandwidth to operate at full speed. As you would

expect, the Mac Pro also offers 802.11ac Wi-Fi.

There is no FireWire port on the Mac Pro, but you can get a Thunderbolt to FireWire adaptor. There are four USB 3 ports, as with the Mac mini and iMac.

The Mac Pro lacks an optical drive. Most people probably have little use for an optical drive these days, but if you really think you need one, then there is always the option of purchasing Apple's USB SuperDrive for £65.

Speed

As you would expect from Apple's flagship Mac, the Mac Pro is fast. However, the year-old 27in iMac and the top-of-the-range 15in MacBook Pro aren't that far behind the entry-level Mac Pro. And if you bump up your iMac when you buy it with build-to-order options you can get a Mac for your money that rivals even the six-core Mac Pro model.

But there is more to the Mac Pro than the speed and many users will be attracted by many of its advanced technologies, such as the dual GPUs, the powerful multicore processors, the Thunderbolt 2 ports, and the superfast flash storage. For many, the build-to-order options will let them build a professional and powerful workstation capable of doing things iMac users can only dream of.

Yet there is something to be said for the iMac with 5K Retina display. The standard 5K iMac features an incredible screen, backed by a 3.5GHz quad-core Intel i5 CPU, 8GB of RAM, 1TB Fusion drive and AMD Radeon R9 M290X GPU for £1,999. Build-to-order options include a 4GHz i7 (£200), and upgrading the GPU to an AMD Radeon R9 M295X for £200. If you added these two features to the iMac, you would pay £2,399, which is still less than the Mac Pro and includes a 5K display; an equivalent Dell display costs just under £2,000.

Price

There are two Mac Pro models available, with a number of build-to-order options that you can add on at the point of purchase.



Configuring the ultimate Mac Pro will cost you a cool £7,779. If you have any cash left over, then you could add a Sharp 32in 4K monitor to that for another £2,999. Or why not go the whole hog and add three Sharp 4K monitors, setting you back £16,776. That would be some Mac setup.

If you have the cash, we would recommend the six-core Mac Pro over the quad-core, but even better, add as many build-to-order options as you can afford.

Prices

Mac Pro 3.7GHz (quad-core) £2,499
Mac Pro 3.5GHz (six-core) £3,299

Build-to-order options

3.5GHz six-core with 12MB of L3 cache £400 (quad-core only)
3GHz eight-core with 25MB of L3 cache £1,600/£1,200
2.7GHz 12-core with 30MB of L3 cache £2,800/£2,400
16GB RAM £80 (quad-core only)
32GB RAM £400/£320
64GB RAM £1,040/£960
512GB SSD £240
1TB SSD £640
Dual AMD FirePro D500 GPUs with 3GB GDDR5 VRAM £320 (quad-core only)
Dual AMD FirePro D700 GPUs with 6GB GDDR5 VRAM £800/£480



Which Mac?

HOW TO CHOOSE THE MAC THAT WILL SUIT YOU

With so many Macs to choose from, each with very different features and specs, it can get a little tricky when it comes to deciding which Mac to buy. How do you know which Mac is best for you? Should you buy a Mac mini, an iMac or a Mac Pro? Or would you be better off with a MacBook, MacBook Air or a Retina MacBook Pro? Which Mac is best for you really depends on your needs and how much you are prepared to spend to meet them.

As a rule Macs are more expensive than PCs, but that's really because there are more low-cost PCs available. If you want a laptop that costs less than £300, then you will have to settle on a PC (or find yourself a second-hand Mac). However, we think it's worth spending a little more to get a lower-priced Mac, rather than saving a few pounds buying a budget PC.

If you want to spend as little as possible on your new Mac, you have a few choices. The Mac mini is an obvious one, with the price starting at £399, but you will need to factor in the cost of a display as well as a mouse and keyboard if you don't already have those peripherals.

An alternative might be the £799 11in MacBook Air, which is a neat little laptop, although you may end up buying a separate display to plug into when sitting at your desk.

If you are happy to spend a little more on a reasonably priced Mac laptop, then you might like the 13in MacBook Air or the 13in MacBook Pro with Retina display. These models start at

£849 for the Air, and £999 for the Pro, with the Pro version bringing a faster

processor and more RAM as well as that gorgeous Retina display. The one thing in favour of the Air is the longer battery life (12 hours as opposed to nine). There is also the weight difference, but it's quite minor really – the Pro is 1.57kg, while the Air weighs 1.08kg. There's is now the added option of the new MacBook. Weighing in at 920g, it's lighter than any other Mac laptop, though, also less powerful. It's priced at £1,049 and £1,299.

If it's a reasonably priced desktop you are after, then the £899 iMac might look like a good option, but you should note that the specs in that machine are pretty similar to those in the £399 Mac mini. With that in mind, it might be better to spend a little more to get one of the other two 21.5in iMacs, although both of those cost more than £1,000.

Another option would be to get a build-to-order version of the iMac with a Fusion drive, which will bring a faster flash drive into the equation for an extra £200. That would bring the price of your iMac to £1,099, or if you did the same with the Mac mini, £599. In both cases we've found the Fusion drive a better option than the next model up in the same range, because the additional flash memory will speed up the Mac more than another model still restricted by a standard hard drive.

But what if you are prepared to spend a little more to get a decent Mac laptop? In that case we'd

recommend the 15in Retina MacBook Pro. It costs £1,599 but comes with a decent quad-core Intel Core i7 processor as well as 16GB of memory. It also comes with 256GB of flash storage; if you think you need more you can get 512GB for £1,999, but we'd probably go for an external hard drive if we needed extra space.

If you want to spend a little more to get a decent Mac desktop, then the 27in iMac is a great option. Prices start at £1,499 and you get a decent quad-core Intel Core i5 processor. The only thing that lets the iMac down compared to the MacBook Pro is the slower hard drive that comes as standard, and the 8GB of RAM. Both of these factors can be rectified when you buy the Mac, as you can take up the 16GB of RAM option for an additional £160, and a Fusion drive or 265GB flash storage for another £160. That would bring the price of your iMac to £1,769.

If it's a top-of-the-range Mac you want, then you have two choices: the 27in Retina 5K display iMac, which costs £1,999; or the Mac Pro, Apple's workstation-class Mac, which features a Xeon E5 processor, 12GB of RAM, dual AMD graphics cards and 256GB of flash storage, with prices starting at £2,499. The Retina iMac comes with a Fusion drive, 8GB of RAM, and a superfast Intel quad-core i5 processor. That's a difference of £500, although with the iMac you gain the gorgeous display; to get a similar 5K display, such as Dell's UltraSharp 27 Ultra HD, to use with your Mac Pro would set you back £1,762. We'd be inclined to recommend the iMac in this case.



iPhone 6 Plus

APPLE'S BIGGEST PHONE, THE IPHONE PHABLET

When Apple introduced the iPhone 5 in 2012, it described it as the perfect size for a smartphone – you could hold it comfortably in one hand while reaching all four corners with the thumb of that hand. Apple might have been convinced back then that a 4in screen was perfect, but in the years that followed alternative smartphones arrived in sizes that dwarfed the iPhone 5. By 2014 the iPhone was one of the smallest smartphones available; it seemed that people didn't really mind that much if they couldn't reach the corner with their thumb.

Apple launched its first entry into the phablet category in September 2014. The iPhone 6 Plus is Apple's biggest ever iPhone with a screen

that measures a whopping 5.5in (diagonally) and offers 1920x1080 resolution at 401 pixels per inch. Phablet is the term used to describe a large phone that is almost a tablet. The popularity of phablets is thought by some to be causing a decline in interest in tablets themselves, as people turn to large phones that have good-sized screens and bring the advantage of operating as a mobile phone.

The iPhone 6 Plus is available in silver, gold or space grey, and measures 158.1mm tall by 77.8mm wide, is a mere 7.1mm thick and 172g in weight. Apple addressed its concerns about users' comfort when holding such a big phone: the iPhone 6 Plus comes with a Reachability feature, which at a double-tap on the home button brings the top of the screen down so you can reach the controls.

The iPhone 6 Plus features Apple's A8 chip and the M8 motion co-processor. The motion co-processor chip is used to collect sensor data – it's a clever way to save battery life as it bypasses the processor. A barometer is also included inside the iPhone 6 Plus.

The iPhone 6 Plus offers Touch ID, and like the iPhone 6, NFC, which is a necessary technology if you intend to use Apple Pay (not yet launched in the UK).

There is also a new 8Mp iSight camera on the back with focus pixels and an f/2.2 aperture (also shared with the iPhone 6). The iPhone 6 Plus camera is the only Apple iPhone to offer optical image stabilisation, which makes for better pictures in low light. The iPhone 6 Plus shares many of its other camera features with the iPhone 6, including 43Mp panorama and the option of recording HD video at 60fps and slo-mo video at 120fps or 240fps. You also get cinematic video stabilisation and continuous autofocus video in both iPhone 6 models. Another feature offered only by the iPhone 6 and 6 Plus is 802.11ac Wi-Fi (other iPhones only go as high as 802.11n).

Perhaps the biggest deal for those looking to purchase a new phone is battery life. Apple says that the iPhone 6 Plus battery life gives up to 24 hours of talk time on 3G; up to 16 days/384 hours on standby; up to 12 hours of internet use on 3G, up to 12 hours on LTE, and up to 11 hours on Wi-Fi; up to 14 hours of video playback; and up to 80 hours of audio playback.

By contrast, Apple says that the iPhone 6's battery life gives up to 14 hours of talk time on 3G; up to 10 hours of internet use on 3G, up to

10 hours on LTE, and up to 11 hours on Wi-Fi; up to 11 hours of video playback; and up to 50 hours of audio playback.

So the iPhone 6 Plus gives you the most battery life you can get from an iPhone. This is no real surprise, as the iPhone 6 Plus's battery is listed at 2915mAh at 3.82 volts, which is substantially larger than the iPhone 6's 1810mAh battery.

Speed

The iPhone 6 and iPhone 6 Plus are powered by the same A8 processor, but at different clock speeds. The iPhone 6 Plus runs at 1.39GHz compared with the iPhone 6's 1.2GHz.

For that reason, the iPhone 6 Plus is faster than the iPhone 6. When we ran Geekbench the iPhone 6 Plus scored 1,626 (single-core) and 2,917 (multicore), while the iPhone 6 scored 1,517 (single-core) and 2,586 (multicore).

Graphics performance is also good, but we've yet to notice any real difference between the iPhone 6 Plus and the iPhone 5s, although as more graphics-heavy games appear you may be glad of the extra graphics prowess.

Price

The iPhone 6 Plus starts at £619. Each of the three models available costs £80 to £90 more than the equivalent capacity iPhone 6.

Prices

16GB iPhone 6 Plus £619
64GB iPhone 6 Plus £699
128GB iPhone 6 Plus £789

However, we'd advise against buying the 16GB entry-level version – you are likely to find it frustrating staying within 16GB, especially when Apple next updates its operating system (in 2014 the OS required as much as 5GB of space on some iPhones). The 64GB iPhone 6 Plus costs just £80 more for four times as much storage.



iPhone 6

THE 4.7IN SUCCESSOR TO THE IPHONE 5S

The iPhone 6 Plus wasn't the only larger iPhone to launch in 2014. The iPhone 6 was also introduced, with a screen that measures 4.7in (diagonally) and offers 1334x750 resolution at 326ppi.

This suggests that the iPhone 6 has the same pixel density as the iPhone 5s, but Apple has still dubbed its new screen 'Retina HD', presumably because it is counting the total number of pixels on display, rather than how close together they are. The iPhone 6 Plus offers a higher pixel density of 401ppi and is also described as Retina HD. Despite the similar sounding pixel count between the iPhone 6 and iPhone 5s, Apple has also made modifications to the newer screens' design, adding dual-domain pixels that allow for improved viewing angles, and other features that enhance the visibility of the display as well as a better contrast ratio (the contrast ratio on the iPhone 6 is in fact better than that on the iPhone 6 Plus).

iPhone 6 sports the same curvaceous design as the iPhone 6 Plus, albeit slightly smaller dimensions. It measures 138.1mm tall by 67mm wide, is just 6.9mm thick, and weighs 129g. It is available in silver, gold or space grey.

Although smaller than the iPhone 6 Plus, the iPhone 6 is still very large, and only the most gigantic hands would be able to comfortably reach to the edges in one-handed use. As a result Apple, also offers Reachability on the iPhone 6, which allows you to double-tap on the home button to pull the top of the screen down so you can reach the controls.

One major design change for the iPhone 6 and iPhone 6 Plus is the relocation of the on-off button. This was found at the top of the phone in previous generations, but now the button has moved to the side of the phone to make it easier to reach when you are holding it one-handed (the new home for this button does make taking screen shots harder, though).

Like the iPhone 6 Plus, the iPhone 6 features Apple's A8 chip and the M8 motion co-processor. The A8 is 50 percent more power-efficient than the A7, according to Apple.

A barometer is also included for measuring air pressure to determine your elevation (it can basically tell if you have been going upstairs). This is one of the new fitness and health features available to iPhone users. All iPhones also offer an accelerometer and gyroscope for the same purpose.

The iPhone 6 also offers Touch ID, and, as does the iPhone 6 Plus, NFC, which is a necessary enabling technology for using Apple Pay (not yet launched in the UK).

All of Apple's current iPhones offer an 8Mp camera. The iPhone 6 and iPhone 6 Plus camera still only offers 8Mp, but it gains focus pixels. Both iPhone 6 models and the iPhone 5s offer an f/2.2 aperture.

The iPhone 6 shares some other camera features with the iPhone 6 Plus. These include 43Mp panoramas, the option of recording HD video at 60fps and slo-mo video at 120fps or 240fps. There is also cinematic video stabilisation and continuous autofocus video. You will also find 802.11ac Wi-Fi in the iPhone 6, while the older models only go as high as 802.11n.

When it comes to battery life, Apple says that the iPhone 6 offers up to 14 hours of talk time on 3G; up to 10 hours of internet use on 3G, up to 10 hours on LTE, and up to 11 hours on Wi-Fi; up to 11 hours of video playback; and up to 50 hours of audio playback. You'll get more battery life from the iPhone 6 Plus, but the iPhone 6 battery is still better than those in the iPhone 5s and iPhone 5c, which both have identical battery life, according to Apple. The iPhone 5s/5c handsets offer up to 10 hours of talk time on 3G; up to eight hours of internet use on 3G, up to 10 hours on LTE, and up to 10 hours on Wi-Fi; up to 10 hours of video playback and up to 40 hours of audio playback.

Speed

Both the iPhone 6 and iPhone 6 Plus are powered by the same A8 processor, but it's running at different clock speeds. The iPhone 6 runs at 1.2GHz, while the iPhone 6 Plus runs at 1.39GHz, according to Geekbench.

When we ran Geekbench the iPhone 6 scored 1,517 (single-core) and 2,586 (multicore), while the iPhone 6 Plus scored 1,626 (single-core) and 2,917 (multicore).

Not surprisingly the iPhone 6 Plus is faster than the iPhone 6.



The iPhone 6 is faster than the iPhone 5s, though. The iPhone 5s scored 1,409 (single-core) and 2,549 (multicore).

Graphics performance is good, but you are unlikely to notice any real difference unless you are using really graphics-heavy games.

Price

The iPhone 6 starts at £539 – £10 less than the original starting price of the iPhone 5s when it launched in 2013.

Prices

16GB iPhone 6 £539
64GB iPhone 6 £619
128GB iPhone 6 £699

Each of these phones costs £80 to £90 less than the same-capacity iPhone 6 Plus.

As we mentioned previously, we'd advise against buying the 16GB version as you are likely to find it frustrating staying within that 16GB storage limit, especially when Apple next updates its operating system (which in 2014 required as much as 5GB of space on some iPhones). The 64GB iPhone 6 costs just £80 more and for that you get 300% more storage.



iPhone 5s

THE 4IN IPHONE WITH TOUCH ID

In 2013 Apple upgraded its existing iPhone platform, splitting the iPhone 5 into two in the process. It created the iPhone 5s, which features Touch ID to let you unlock your iPhone and pay for things on the App Store merely by touching your finger to the home button, and the more playful iPhone 5c, which comes in a range of colours. Both phones are still available from Apple, although the larger capacities are now discontinued. They remain good options for those looking for a cheaper iPhone.

The iPhone 5s screen measures 4in (diagonally) and offers 1136x640 resolution at 326ppi. Although this may suggest that the iPhone 5s has the same pixel density as the iPhone 6, the iPhone 6 has a greater number of pixels in total, not to mention a superior screen with better viewing angles and contrast ratio.

The iPhone 5s sports a different design to the iPhone 6 models and the iPhone 5c. The iPhone 5s is more angular, with sharper edges, while the other models have curved edges. It is the smallest and lightest iPhone, measuring 123.8mm tall by 58.6mm wide and just 7.6mm thick, and weighs 112g. Like the iPhone 6 models, the 5s is also available in silver, gold or space grey.

Both of the cameras on the iPhone 5s offer improvements when compared to the iPhone 5c. The camera on the back has bigger pixels, a bigger sensor, a new True Tone flash, and various other hardware and software features.

As far as the bigger pixels are concerned, larger pixels yield greater electrical output,

which produces clearer images in low-light conditions without any resort to messy noise-reduction techniques.

When Apple launched the iPhone 5s it was the first time that a smartphone manufacturer had opted to increase pixel size rather than pixel numbers. All iPhone cameras offer 8Mp – and this is sufficient. Cramming a load of pixels onto a sensor will not create a better image, it just means that the file size is bigger. The larger sensor and a bigger lens serve to let in more light, as does the faster aperture of f/2.2 instead of f/2.4. The faster f/2.2 aperture on the iPhone 5s really helps with indoor and dusky shooting. Both iPhone 6 models also offer a f/2.2 aperture.

The iPhone 5s lacks some of the camera features you'll find on the iPhone 6 Plus and iPhone 6, including 43Mp panoramas, the option of recording HD video at 60fps and slo-mo video at 120fps or 240fps. HD video and slo-mo features are all available on the iPhone 5s, but the quality is poorer. One other area where the iPhone 5s surpasses the iPhone 5c is the FaceTime camera, which offers auto HDR for photos.

Only the iPhone 6 models offer 802.11ac Wi-Fi. The older iPhone models only go as high as 802.11n.

When it comes to battery life, Apple says that the iPhone 5s offers up to 10 hours of talk time on 3G; up to eight hours of internet use on 3G, up to 10 hours on LTE, and up to 10 hours on Wi-Fi; up to 10 hours of video playback; and up to 40 hours of audio playback. You'll get more battery life from the newer, iPhone 6 models.

Speed

The iPhone 5s is powered by the A7 processor, which was first introduced with this phone in 2013, running at 1.3GHz, according to Geekbench. When the A7 chip launched it was a giant leap on its own account, offering a huge speed improvement thanks to its 64-bit capabilities.

When we ran Geekbench, the iPhone 5s scored 1,409 (single-core) and 2,549 (multicore). By comparison the iPhone 6 scored 1,517 (single-core) and 2,586 (multicore), while the iPhone 6 Plus scored 1,626 (single-core) and 2,917 (multicore). The Geekbench score of the iPhone 5s was more than twice that of the iPhone 5c.



When it comes to games and graphics capabilities, the GPU performance of the iPhone 5s is superior to that of the iPhone 5c; we saw some big differences using GFXBench 2.7's T-Tex C24Z16 1080p offscreen test. The iPhone 5s was able to push 25 frames per second, more than three and a half times the number of frames supported by the iPhone 5c. While these results are below the iPhone 6 and 6 Plus, it is unlikely you will really notice the extra unless you are playing the most power-hungry games.

Price

The iPhone 5s starts at £459, which is some £90 cheaper than the same model cost when it launched in 2013.

Prices

16GB iPhone 5s £459
34GB iPhone 5s £499

The iPhone 5s is the only iPhone available with a 34GB capacity. Apple removed the 34GB option from the line-up for its iPhone 6 models, which come only in 16GB, 64GB and 128GB versions.

But at just £40 more it's a no-brainer to buy the 34GB version of the iPhone 5s. We'd advise against the 16GB version, as you are likely to find it frustrating staying within that storage limit. When Apple updates its operating system it will take even more than the 5GB of space required on some iPhones by its 2014 update.



iPhone 5c

APPLE'S CHEAPEST, MOST COLOURFUL IPHONE

When the iPhone 5c launched in 2013 it disappointed some who were hoping for a low-cost smartphone from Apple. At launch the iPhone 5c cost £469 – only £80 less than the equivalent iPhone 5s. Months later the company introduced a 8GB version of the 5c for £429. Now that same 8GB version of the iPhone 5c costs £319, a saving of £110. The big question, though, is whether £319 now represents a good price for the iPhone 5c.

If you are determined to buy an iPhone but don't want to spend a lot, then the iPhone 5c might be worth considering. If price is your main concern, it's also worth looking around for a second-hand iPhone, or you may find you can get a good deal on a new handset from your mobile phone network. All the prices we quote are what Apple sells the iPhone for if you purchase it off-contract, allowing you to shop around for a monthly plan or pay-as-you-go contract that suits you (or perhaps you already have a great contract and don't want to lose it). It is also likely you will be able to find a contract with one of the UK mobile networks that will give you an iPhone 5c handset for free.

The main issue with the iPhone 5c is that it offers just 8GB of storage space; although we have heard of some mobile networks offering 16GB iPhone 5c models, Apple doesn't. You may find it hard to imagine that you will ever need a great deal of storage space, but it's worth considering that when the next version of the iPhone operating system is released

you may well find that you will need more space to install the update than you have available on your iPhone.

In this case, while the leap up to the iPhone 5s is not easy to recommend – because at £140 more it is quite a significant extra chunk of cash – it will still give you twice as much potentially precious storage as the 5c. The 5s also comes with various other features such as Touch ID, so you can unlock your iPhone and pay for things on the App Store merely by touching your finger to the home button.

Like the iPhone 5s, the iPhone 5c has a screen that measures 4in (diagonally) and offers 1136x640 resolution at 326ppi.

The design of the iPhone 5c is more reminiscent of the original iPhone than the iPhone 5s and iPhone 6 models. It has a smooth plastic case that comes in five different colours: green, blue, yellow, pink and white. It's a fraction larger and heavier than the iPhone 5s, measuring 124.4mm tall by 59.2mm wide and just 8.97mm thick, and weighs 132g (only the iPhone 6 Plus is heavier).

In many ways the iPhone 5c is the same phone as the iPhone 5 was when it launched in 2012. Aside from the new case, on the inside the iPhone 5c has the same rear-facing camera and processor. The FaceTime camera on the front of the iPhone 5c is better than the one found in the iPhone 5, however, offering better visibility in low-light. The iPhone 5c will take panoramas, but burst mode shooting is not



available, nor is slo-mo video (both are available on all other iPhone handsets).

When it comes to battery life, Apple says that the iPhone 5c offers exactly the same battery longevity as the iPhone 5s: up to 10 hours of talk time on 3G; up to eight hours of internet use on 3G, up to 10 hours on LTE, and up to 10 hours on Wi-Fi; up to 10 hours of video playback; and up to 40 hours of audio playback.

Speed

Although the iPhone 5c features the same A6 processor as the iPhone 5, in some of our tests it scored slightly worse than its predecessor. For example, the iPhone 5 was about 10 percent faster than the 5c in Geekbench tests. As for the iPhone 5s, that model's Geekbench score was more than twice that of the iPhone 5c. However, even these speeds will be more than enough for the average needs of a user.

The GPU performance of the iPhone 5c is also inferior to that of the iPhone 5s, with the latter achieving 25fps, more than 3.5 times more than the iPhone 5c. If you aren't playing games or editing video on your iPhone, though, it is unlikely that this will matter to you.

Price

The 8GB iPhone 5c costs £319. There is only an 8GB model available from Apple, so if you want 16GB or more then you will need to move up to the entry-level 16GB iPhone 5s. But as the 16GB iPhone 5s costs £140 more than the 5c at £459, if you are considering the iPhone 5s, then you might as well fork out another £40 and get the 32GB version of the iPhone 5s for £499.



iPad Air

APPLE'S FULL-SIZED iPad

The iPad is Apple's tablet computer. It's partway between an iPhone and a laptop, offering you the extra screen space, but using exactly the same operating system as the iPhone, so if you already own an iPhone it will feel familiar. There are millions of apps available for the iPad that allow you to do anything from producing spreadsheets and presentations, to playing games, creating photographic masterpieces or editing home videos.

Apple sells two models of iPad Air: the iPad Air 2, launched in October 2014, and the iPad Air, which arrived the previous October. When the first iPad Air launched in 2013 it was already incredibly thin, just 7.5mm, but the iPad Air 2 is even thinner, a mere 6.6mm.

The Air 2 also has an upgraded rear-facing camera (8Mp to the iPad Air 1's 5Mp). There are certain shooting conditions in which the iPad

Air 2 demonstrates its superiority – particularly close-up detail under studio lighting and in low-light conditions. The iPad Air 2 also gains some camera software features including slo-mo and time-lapse video modes, as well as burst mode and a timer. And panoramas: the iPad Air 1 already had these, but they can now go all the way up to 43Mp. We're always surprised that anyone would use the iPad as a camera – it is a rather inconvenient size, yet people often use one to take photos and videos, perhaps because of the size of the viewfinder.

Both iPad Air models offer Retina displays with a resolution of 2048x1536 and a pixel density of 264ppi. However, the iPad Air 2 adds an anti-reflective coating and, thanks to new manufacturing technologies, Apple has been able to remove the 'air gaps' between different elements of the screen, which effectively gives users more display clarity and makes it easier to see the screen from different angles – valuable if, for example, you're sitting next to someone and sharing the iPad screen to watch a movie.

The Air 2 also comes with a Touch ID fingerprint scanner built into the home button. Touch ID is convenient, enabling you to unlock your iPad, or an individual app, with a single touch of a finger rather than a passcode or password. As apps and websites integrate Apple Pay, you will be able to use Touch ID on your iPad to pay for things. However, you won't be able to use the iPad in the high street as it lacks the requisite NFC chip.

Other differences between the iPad Air 1 and 2 include a gold finish as an option for the newer model. The iPad Air 2 is available in silver, gold and space grey, while the iPad Air 1 is available only in silver or space grey. The grey model has a black rim around the screen, but all other iPads are white on the front.

Speed

The iPad Air 2 contains a new processor chip – the A8X, which is a souped-up version of the A8 that made its first appearance in the iPhone 6 and iPhone 6 Plus.

With its A8X processor chip, the iPad Air 2 is significantly quicker at general processing and handling graphical tasks than the iPad Air 1 (which has an A7 chip) – about 40 percent faster, on paper. But at this point that difference is more theoretical than practical. In our Geekbench tests the iPad Air 1 scored 1,468 (single) and 2,658 (multi), while the iPad Air 2 scored 1,818 (single) and 4,520 (multi).

In terms of graphics, Apple claims that iPad Air 2 users will see 2.5 times the graphics performance of the first iPad Air. That's great news for gamers, and video and photo-editing apps will also benefit from the enhanced graphics performance.

However, the iPad Air 1 can handle all current apps, and you're unlikely to see major speed gains with current software. Over time this may change but if all you do with your iPad is browse the web and read and write emails, then you are unlikely to notice any slowdown.

Price

The iPad Air 2 starts at £399 for the 16GB version. Next up is the 64GB model for just £80 more at £479, and the 128GB model costs £559.

The 16GB iPad Air 1 is just £80 cheaper than the entry-level iPad Air 2, at £319. Or you can pay another £40 and get the 32GB version for £359, which is still less than the price of a 16GB iPad Air 2. If Touch ID isn't important to you, you may prefer to pay less and get twice as much storage space.

When choosing which iPad to buy, there is also the decision of whether to get one that is capable of connecting to the mobile networks, rather than just Wi-Fi. The models that can use 3G and 4G in addition to Wi-Fi cost £100 more than the non-cellular models.



iPad mini

APPLE'S SMALLER IPAD

If the iPad Air is partway between an iPhone and a laptop, the iPad mini is partway between the iPhone 6 Plus and the iPad Air. It's a popular choice for those who want to read books. It also used to be popular because it was a lot lighter than Apple's full-sized iPad, but the difference in weight has since been scaled back: the iPad Air 2 weighs 437g while the iPad mini 3 weighs 331g. It's screen size that is the key difference between the iPad Air and iPad mini now, with the Air featuring a 9.7in Retina display and the mini a 7.9in display.

Apple sells three models of iPad mini. The iPad mini 3 was launched in October 2014, and is essentially the same as the iPad mini 2, which launched in October 2013. Apple also still sells the original iPad mini, which was launched in October 2012.

The main difference between the iPad mini 2 and 3 is the inclusion of Touch ID on the later model, and the option of a gold finish.

When Apple launched the newer iPad mini we were disappointed that it didn't also gain any of the features offered by the 2014 iPad Air. For that reason we generally advise saving £80 and purchasing the iPad mini 2 unless you really want Touch ID. The newer iPad costs £80 more than the previous year's model. For some, Touch ID may be worth the extra £80, but other than that there really is no other difference.

There is a much bigger difference between the iPad mini 1 and newer iPad mini models. You can still buy the 16GB original iPad mini for £199 – £70 less than what it sold for at launch (£269). This iPad lacks a Retina display, and is thicker (7.2mm compared with 7.5mm) and heavier (308g compared with 331g) than the other iPad mini models.

If all you need is a low-cost device for reading books or watching video when commuting, the iPad mini 1 might be adequate, although it's still worth paying just £40 more to get the iPad mini 2 – you'd be crazy not to.

All the iPad minis have the same rear and forward-facing cameras. The camera on the rear offers 5Mp photos while the front-facing camera – used predominantly for FaceTime video calling



– offers 1.2Mp. The only real difference between the iPad minis is that the newer models offer panorama shooting while the original iPad mini doesn't. The original iPad mini also lacks 3x video zoom.

All iPad minis have a battery life that gives up to 10 hours of web surfing, video or music on Wi-Fi, and nine hours over a mobile data network.

Speed

Another key difference between the original iPad mini and the newer iPad mini models is the fact that the earlier model features the A5 chip rather than the A7 and M7 motion co-processor combo. The A5 processor first appeared in the iPhone 4s, which should give you an idea of just how old that processor is now. It's a 32-bit system-on-a-chip that also powers the fifth-generation iPod touch and the Apple TV.

The iPad mini 2 and 3 both feature the A7 processor, which can also be found in the iPad Air 1. This is a 64-bit system-on-a-chip that first appeared in the iPhone 5s in 2013 and was the first 64-bit processor to ship in a consumer smartphone.

The A7 is around four times as fast for general processing and about eight times as fast for graphical processing. But these numbers are theoretical, and apply only in situations that exert a significant demand on the processor; on many simple apps the mini 1 will be fine.

As time goes by the most demanding tasks – extremely graphically ambitious 3D games, video and photo editing, and all the more processor-intensive apps that will be released in the next few years – will begin to tax the powers of the iPad mini 1.

Price

There's a £40 gap from the iPad mini 1 to the iPad mini 2, and then an £80 gap from the iPad mini 2 to the iPad mini 3. Priced so closely, it's a no-brainer to pay the extra £40 for the Retina display and better chip in the iPad mini 2. Although the £80 for the Touch ID is less attractive, you might prefer to spend £100 more and get a Wi-Fi and cellular version. Each model is available for Wi-Fi only, or you can add cellular capabilities for another £100, which will enable you to connect to a mobile phone network when you are out and about.



iPods

THE MP3 PLAYER THAT STARTED IT ALL

Apple sells three types of iPod: the iPod shuffle, the iPod nano and the iPod touch.

The iPod touch is far more than just a simple music player. It comes equipped with essentially all the features of a fully fledged iPhone bar the call capabilities. The iPod nano is also a capable device, and small enough to carry anywhere, while the iPod shuffle is simple, inexpensive and tough.

Apple quietly retired the original iPod classic in October 2014, after seven years of faithful service.

With the iPod classic now a distant memory, those wanting a large amount of storage on their iPod will find the options rather limiting. Currently, the iPod shuffle offers a humble 2GB of storage, while the iPod nano boasts a rather more spacious 16GB. It's worth bearing in mind that this means the shuffle can hold around 450 songs encoded at 128kb/s, with the nano's 16GB topping out at around the 4,000 mark. The only model to go higher than 16GB is the iPod touch, which is available in 16GB, 32GB and 64GB variants. While it's nowhere near the mammoth 160GB capacity of the iPod classic, it should still offer enough room for the vast majority of users.

The shuffle is probably the most true to that original iPod, as it focuses solely on playing audio. The lack of a screen has meant that in the past you had to remember what was on the device, and switching between tracks was something of a lottery. Now, thanks to the voiceover feature, the iPod shuffle will read out the name of the track, podcast, audiobook or playlist to you, and allow you to choose the one you want to listen to.

The most obvious feature that differentiates the iPod nano and the iPod shuffle is the nano's 2.5in multitouch display. This enables the iPod nano to have a range of included apps that broaden its appeal. Music is, of course, still the primary function, with the cool ability to create genius mixes on the fly by tapping a button while a song is playing; the device will then automatically generate a playlist from your library based on that track.

A screen also means video, with the iPod nano playing any media synced to it from your iTunes account.

The iPod touch is in a different category to its smaller siblings. As the only iPod to run a full version of iOS, the iPod touch has access to the full App Store, with all the games, productivity

tools, social media and camera apps that you'd expect to find on an iPhone, as well as web access. The built-in camera, while not quite up to the iPhone quality, still offers great shots.

iPods may not share the same always-on nature of smartphones, but battery life remains an important factor for any portable electronic device. You might think that the iPod shuffle would win this category due to its lack of a power-sapping screen, but its diminutive size means a small battery and it lasts for only 15 hours. It loses out to the nano, which goes for around 30 hours, while the iPod touch – which houses the largest battery in the range – holds out for a massive 40 hours of listening time. If you watch video, though, things immediately change, with the nano affording 3.5 hours and the touch falling to eight hours.

The iPod shuffle is best for sports enthusiasts because it's cheap, hardy and can clip onto pretty well anything. Those with smaller music libraries will also appreciate the value of an inexpensive device that is still powerful thanks to the voiceover feature, as will everyone who don't want to spend a lot on a music player.

The iPod nano is ideal for those who want a svelte device with more capacity than a shuffle.

The iPod touch has a higher price tag and in many ways strays rather too close to the smartphone world to make it a compelling device for those who already own an iPhone. If you do want an internet-capable iOS device, then you can

pick up an iPod touch for less than the price of an iPad. The iPod touch is also a great option for teenagers who want to communicate with friends, watch the latest YouTube videos, listen to their music, and not have ongoing bills for their parents to pay.

Price

If you really don't want to spend a great deal on a device, and don't mind a limited set of functions, then the iPod shuffle is a very tempting option at £40. Moving up to an iPod nano will give you a few more advanced features and eight times the storage, but the price jumps up to £129. For iPod royalty, you'll find the three models of iPod touch priced at £159 (16GB), £199 (32GB) and £249 (64GB).



Which iPad and iPhone?

HOW TO CHOOSE THE iOS DEVICE THAT WILL SUIT YOU

With four iPhones and five iPads to choose from, each with very different specs, it can be tricky to decide which iOS device to buy.

Those who want a 'phablet' experience – midway between a phone and a small tablet – might be interested in the iPhone 6 Plus. Fans of gaming and movies will also like the 6 Plus's big screen. Some business users may find the big screen good for productivity apps. The 6 Plus is likely to be the phone of choice for early adopters and others who like to have the latest thing, and for those on a big budget.

If the iPhone 6 Plus is a bit too big (and more than a few buyers have found this), then you might go for the smaller iPhone 6. It still has appeal for those who want a bigger screen (for games and films in particular, but also work apps and a generally more immersive experience) but a more portable device. The iPhone 6 is easier to slip into a pocket (and to use one-handed) than the iPhone 6 Plus. It's also a bit more affordable.

But what if you don't want the iPhone 6 with its 4.7in screen or the iPhone 6 Plus with its 5.5in screen? The iPhone 5s misses out on a lot of the features in the newer iPhones, including the latest processor, various camera features including 43Mp panoramas, the ability to use Touch ID in-store (when Apple launches Apple Pay in the UK), better battery life and

more. But if the smaller screen size is crucial, then it's still a good phone. And it does feature Touch ID (albeit without the NFC chip that will enable Apple Pay on your high street). It's a good deal, especially the 32GB version.

There are various features that the iPhone 5s has that the iPhone 5c doesn't, like the Touch ID fingerprint scanner and a better camera with better photography features. It's the cheapest iPhone, but it's not necessarily the best deal, crippled as it is by its 8GB drive.

The step up from iPad Air 1 to iPad Air 2 brings a faster processor, a better rear-facing camera (8Mp, up from 5Mp) and Touch ID, as well as a device that is 6 percent lighter and 19 percent thinner, with a less reflective screen and the prospect of iOS update support for about a year more than the iPad Air 1. Is all that worth an extra £80? Probably.

The iPad Air 1 is still a great iPad, though, fast enough for all current apps. Those who have light use in mind (email, browsing the web, simple games) should be absolutely fine with it, and would save the extra £80. However, such customers might want to consider a cheaper option still: the iPad mini.

The first and most obvious thing to say is this: £80 extra for the iPad mini 3 (compared with the equivalent mini 2) is a tough sell. All you get for that is Touch ID, and while Touch ID is cool and convenient, it's hardly worth £80.

The £40 price gap between the mini 1 and mini 2, by contrast, seems if anything to be smaller than we'd expect, and we strongly recommend going for the mini 2 rather than the mini 1. For the extra £40, the mini 2 gets a much faster processor than the mini 1 and a Retina display, and those are both major selling points – the A7 is more important than ever, given how

much apps have moved on in the past year (it's a must-buy if you're seriously into iPad gaming).

The A5 processor in the iPad mini 1 is only going to get more and more tired when tackling games and demanding apps.

It is also possible that the original iPad mini will become obsolete in the next couple of years – unable to update to the next version of iOS. If that happens you won't be able to run all the apps out there.

Also, if you're used to Retina displays already – you've got an iPad 4, say, or you borrow a friend's iPad mini 2 a lot – then you might find the iPad mini 1 a tiny bit fuzzy.



Apple TV

APPLE'S SET-TOP BOX

The Apple TV is a connected set-top box, measuring 23mm by 98mm by 98mm and weighing 27g, that offers access to iTunes TV shows and movies, as well as content from Netflix, YouTube and Vimeo. You can also stream content to your TV from your Mac, iPhone and iPad. It costs £59.

The Apple TV isn't a TV in the normal sense of the word, because it doesn't have free-to-air channels or a digital video recorder to store shows to watch at a more convenient time. However, it does offer what could be described as channels, and this content keeps on growing, leaving us hopeful for a future where the Apple TV will include links to on-demand services just like our iPhones and iPads do – think the iPlayer and 4oD apps and you're not too far away.

Apple has made multiple updates to the Apple TV software over the years, adding a number of new app-style TV channels, delivering new content to Apple TV users. Most recently the Now TV app addition brought Sky entertainment, movies and sports content to the Apple TV, for a subscription.

Probably the most popular app on the Apple TV is Netflix. In many ways it's the only reason we recommend the Apple TV right now, because without it there would be very little content available to UK users. When a Netflix subscription costs just £5.99 a month, it is very difficult to recommend spending almost that much on hiring a single movie to watch via Apple's own iTunes Store, although you will find some iTunes content that won't appear on Netflix for months or years – or maybe not at all.



In the US the Apple TV includes Hulu Plus, HBO Go, Showtime Anytime, Fox Now, Watch ABC, Disney Channel, Disney XD, Disney Junior, PBS, A&E, History, Lifetime, WatchESPN and much more.

It is possible to run apps for some services on an iPhone, iPod Touch or iPad and then stream them to the Apple TV using AirPlay – but the Apple TV really needs to provide direct access to those services without requiring any expensive additional hardware.

Despite the limited content here in the UK there is still a lot to like about the Apple TV. It's well built and easy to use. Some of the better features work only with other Apple products, but if you own those products then the Apple TV is a great addition.

We like the Apple TV's user interface too. It's simple and intuitive, as you'd expect from Apple, and will be familiar to all iPad and iPhone users as it utilises the bright and bold iOS looks. You navigate the setup menus and input Wi-Fi network and password via the included Apple TV remote or using your iPhone and the Remote app. You can also pair it with a Bluetooth keyboard. Using the keyboard

of the iPhone app simplifies the task of entering network passwords or using the search function when browsing content.

The Apple TV includes an HDMI interface with 1080p output for connecting to your high-def TV, as well as built-in Wi-Fi for your home network. There's no hard drive inside that tiny little box, so you can't download films or TV programmes for permanent storage, but you can download purchases onto a Mac or PC using iTunes and then stream them to the Apple TV using Apple's AirPlay wireless technology. AirPlay will also allow you to stream video from any iOS mobile device.

New Apple TV on its way

The last time Apple updated the Apple TV was back in January 2013, and even then it was just a minor update. Speculation about a fourth-generation Apple TV has been mounting, and it's certainly possible that Apple is gearing up to launch a new Apple TV this year.

In the two years since the last Apple TV update, many competing products from rival companies have launched, so Apple really needs to get a move on if it wants to dominate the set-top box market.

This new Apple TV may be smaller than the existing one, and it may feature a new remote, be Siri-activated, or even, rumour has it, be controlled using Kinect-like gestures.

Other rumours suggest that the new TV could include access to the iOS App Store so that users can purchase apps that can be viewed on their TV set – as well as games that can be played on the Apple TV. Our biggest wish, though, is that Apple brings the UK on-demand channels to the Apple TV – all its competitors offer them and their absence represents a serious failing on Apple's part.

Hopefully, any new features coming to the Apple TV will work on the current model as well as any new one that Apple launches.



Apple Watch

APPLE'S UPCOMING ATTEMPT TO REINVENT THE SMARTWATCH



Apple unveiled the Apple Watch back in September 2014, and it will finally be on sale on 24 April 2015.

The best news here is that Apple's not just launching a smartwatch but a whole raft of smartwatches. By combining the three different Apple Watch categories, the two different face sizes, and the accompaniment of straps, there is the potential for 38 different Apple Watches, so there will be a style to suit anybody. And crucially, since Apple is offering two watch face sizes, the Apple Watch will be as comfortable on a female wrist as it is on a man's.

Where other companies have failed to come up with a smartwatch design that suits anyone, Apple has solved the issue by coming up with multiple designs to suit everybody.

Rather than try and make one watch to suit everyone, Apple has designed three basic Apple Watch varieties targeted at different groups of people. Starting at £299, the Watch Sport, for example, is ruggedised and has a strengthened Ion-X glass face so it should be able to take some bashing. It's also the lightest of the three Apple Watch editions because its case is made from anodised aluminium. The Watch Edition is clearly designed for the fashion-conscious, with a beautiful 18-carat gold case available in yellow or rose gold; it even comes in a fancy leather box that doubles as a charging cradle. Prices start at a staggering £8,000.

The watch face itself comes in two sizes: one is 42mm high, the other 38mm. The sapphire (for the Apple Watch and Watch Edition) or Ion-X glass face (for the Apple Watch Sport) sits in a case made from stainless steel, aluminium or gold, depending on which of the three models

you opt for (Apple Watch, Apple Watch Sport or Apple Watch Edition, respectively). The stainless steel finish is available in standard or black, the aluminium finish in silver or grey, and the 18-carat in yellow gold or rose gold.

There is also a collection of straps to choose from, including link bracelet, sport band, leather loop, classic buckle, modern buckle and Milanese loop. The leather loop and sport band options are offered in multiple colour choices. The sport band comes in black, white, pink, blue and lime green, for example.

And if that's not enough customisation options for you, there are a number of watch faces to choose from – some are even animated. And you can change the colours and design elements of these.

The problem that many of the current smartwatches have is that the user interface is packed into a tiny display and you need to manipulate those tiny visual elements using your fingers – which are inevitably bigger than the elements you are trying to touch.

Apple's solution is to make use of the stud on the side of the watch that was once used to wind up clockwork watches. This stud – its proper name is the crown – has been turned into what Apple calls a Digital Crown. This Digital Crown solves the problem of swiping through icons on a minuscule display. You can use the crown to zoom in on interface elements and scroll through content on the watch face, without your fingers obscuring the view. The Digital Crown can be used to navigate through lists as well as zoom in on data, maps and photos.

This doesn't mean that the watch face isn't touch-sensitive. You can tap and swipe the

Apple Watch face. In fact, the Apple Watch can determine just how hard you touched the screen. It can distinguish between a normal tap, used to select things, and a harder press, used to access contextual menus. Apple calls this technology Force Touch.

You aren't the only one doing the tapping when it comes to the Apple Watch. The watch incorporates what Apple calls a taptic engine, which lets it 'tap' your wrist to alert you to notifications. It's similar to the vibrate function on an iPhone, except that only you know that you are being nudged.

You can also interact with the Apple Watch via Siri, dictating messages or requesting turn-by-turn directions.

There will be various apps available for the Apple Watch. These are slimmed-down snippets of apps, referred to by Apple as 'Glances'. You will be able to glance at Messages, Mail, Weather, Calendar, Maps, Passbook, Music, Photos and more. Apple will also offer its own Activity app for the Apple Watch – it uses three circles to demonstrate how close you are to meeting your targets for calories burned – and a number of other health and fitness apps will also be available.

You will be able to use the Apple Watch to pay for things, just as soon as Apple launches its Apple Pay technology in the UK. All you do is double-click the button and hold up your watch to a payment reader. This is made possible because the Apple Watch includes an NFC chip, as do the iPhones 6 and 6 Plus. For added security, if you take the Apple Watch off, it'll lock and require a code before you can purchase anything.

Apple peripherals



AirPort Time Capsule

2TB £249, 3TB £349

The Time Capsule works with Apple's Time Machine app to make backing up your Mac really simple. It comes with 2TB or 3TB of storage and continuously makes a copy of everything on your Mac, backing up the files you've changed automatically, wirelessly, and in the background.

Full review: tinyurl.com/Lh6pjqu



AirPort Express

£79

Apple's AirPort Express is a Wi-Fi base station that also features the ability to stream audio from a Mac, iPad or iPhone to a stereo using AirPlay – kind of like an Apple TV for your stereo. It also works as a wireless access point to extend the range of a network but is only 802.11n-capable.

Full review: tinyurl.com/q4xqsqz



AirPort Extreme

£169

The AirPort Extreme is a Wi-Fi base station that combines the functionality of a router, network switch and wireless access point. You can also attach a hard drive to it for wireless network attached storage (NAS). It supports 802.11ac. Note that AirPort devices are routers, not modems.

Full review: tinyurl.com/mfdLLsc



Thunderbolt Display

£899

Introduced in 2011, Apple's Thunderbolt Display is almost four years old. It offers 2560x1440 resolution, 375cd/m² brightness, and a 1,000:1 contrast ratio. But it's more than a monitor – it offers three USB 2.0 ports, a FireWire 800 port, gigabit ethernet and, of course, a Thunderbolt port.

Full review: tinyurl.com/nkhkzm8



Magic Trackpad

£59

Apple introduced the Magic Trackpad back in 2010. It's similar to the trackpad on a MacBook, and it's designed to complement Apple's Wireless Keyboard as an alternative to a mouse. The Magic Trackpad's functions are practically identical to its laptop counterparts.

Full review: tinyurl.com/qd474vb



Magic Mouse

£59

Sounding a bit like a kid's superhero, the Magic Mouse is a multi-touch Bluetooth mouse that lets you click anywhere, scroll in any direction and perform gestures like you do on the Trackpad. It's a bit more precise to use than the Magic Trackpad and is included with every new iMac.

Full review: tinyurl.com/nc9o95e



Apple Wireless Keyboard

£59

Like the Magic Mouse, the Bluetooth-enabled Apple Wireless Keyboard is available with every new iMac. Its use doesn't stop with the Mac, though. Apple's Wireless Keyboard can be paired with an iPad, iPhone or an Apple TV to make entering data easier on those devices.

Full review: tinyurl.com/kuoa86k



Apple Keyboard

£40

There is also a wired keyboard available for those who prefer not to be constantly looking for batteries. It features a numeric keyboard, which is handy if you are often working with data. We love the Apple keyboards because they are quiet to use and the low profile helps avoid RSI.

Full review: tinyurl.com/px5rj8c



Apple EarPods

£25

Designed according to the geometry of the ear, Apple's EarPods are more comfortable for many people than other earbud-style headphones. A built-in remote lets you adjust the volume, control the playback of music and video, and answer or end calls with a pinch of the cord.

Full review: tinyurl.com/mmvo52c



Apple In-Ear Headphones

£65

Apple says its In-Ear Headphones with a mic and remote are "engineered for superior acoustic accuracy, balance and clarity". Each earpiece contains two dedicated drivers – a woofer to handle bass and mid-range, and a tweeter for high-frequency audio. If you prefer in-ear headphones – which tend to let less sound leak, so you don't have to blast the sound out as high – these could be a good option.

Apple software



OS X 10.10 Yosemite

Free

The latest version of Apple's operating system for the Mac launched in October 2014 with a completely new look. Benefits of the new OS include better continuity between your iPad, iPhone and Mac, with features such as AirDrop and Handoff making it easier to move between devices.

Full review: tinyurl.com/ohv23hs

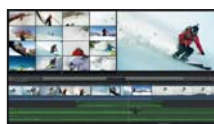


iOS 8

Free

Apple introduced iOS 8 in September 2014. The new operating system for iPad and iPhone brought a way to share content with your family and iCloud Drive, making it easier to store and access data in the cloud. Other additions include extensions, improved keyboard and the Health app.

Full review: tinyurl.com/kmavwnw



Final Cut Pro X

£229.99

Final Cut Pro X is Apple's professional video editing suite. It lets you work with multiple streams of 4K ProRes at full resolution, play back complex graphics and effects in real time without rendering, and output 4K video to ultra-high-definition displays via HDMI and Thunderbolt 2.

Full review: tinyurl.com/phs7zc7



Logic Pro X

£149.99

Apple's Logic Pro X is Apple's professional music creation software. It includes a huge collection of instruments, effects and loops, as well as drummer tracks. It's aimed at professionals but is also a great step up from GarageBand for those who want to get serious about music creation.

Full review: tinyurl.com/nfgavnz



GarageBand

Mac £3.99, iOS £3.99

This music creation software is available for both Mac and iOS. It offers a complete sound library with software instruments and virtual session drummers. You can learn to play an instrument as well as play, record, create and share your hits. Free with new Macs and iOS devices.

Full review: tinyurl.com/nk5srLq



iMovie

Mac £10.99, iOS £3.99

This home movie making software is available for iPhone, iPad and Mac. You can create an HD movie, or quickly put together a Hollywood-style trailer. It's an easy way of turning the video you take on your iPhone into something you'd want to share. Free with new Macs and iOS devices.

Full review: tinyurl.com/pc7xp3e



iTunes 12

Free

Apple's iTunes was originally music jukebox software that came into its own with the launch of the iPod. Since then iTunes has grown and is now the means by which users can manage all their media: music, movies, apps and more. Use iTunes on a Mac to access the iTunes Music Store.

Full review: tinyurl.com/kj32hvu



Pages

Mac £14.99, iOS £7.99

Pages is Apple's answer to Microsoft Word (and is compatible with Word). It's a word processor for Mac and iOS that works seamlessly between the different devices. In many ways it's more of a page layout application for creative people, with more design-led features than Word.

Full review: tinyurl.com/qfdzjfc



Keynote

Mac £14.99, iOS £7.99

Keynote is a presentation app for Mac and iOS that is basically Apple's answer to PowerPoint. It features really easy-to-use tools, some great effects, animations and transitions for creating attractive presentations. You can save Keynote documents as PowerPoint files if you wish.

Full review: tinyurl.com/nz3q3uf



Numbers

Mac £14.99, iOS £7.99

Apple's answer to Excel is Numbers, a spreadsheet app that can be used on both Mac and iOS devices. Because it's Apple, Numbers lets you turn your data into a thing of beauty, dropping your figures onto one of Apple's templates, but it also does the maths, supporting over 250 functions.

Full review: tinyurl.com/o5qnk4g

Apple Watch and the wealth question

Why Apple Watch pricing makes everyone so angry

A few weeks on from the Apple Watch launch event (or rather, the Apple Watch launch event part 2)

and we're still hearing surprisingly vociferous reactions concerning that most awkward of subjects: money.

The luxury version, the Apple Watch Edition, starts – starts! – at £8,000 and tops out at £13,500. Which is certainly a great deal of cash to be talking about. But from the angry comments I've been seeing (mostly on Twitter, admittedly, which is not the medium you should turn to for live-and-let-live equanimity) you'd think Tim Cook had turned up at people's houses with a gun and a balaclava.

Aside from the first and most obvious point that must be always be borne in mind when reading social media – that human beings have a variety of opinions and this isn't the end of the world – it feels pertinent to wonder aloud why the *option* to spend a lot of money on a luxury product (the bottom-end Sport version of the Apple Watch starts at just under £300, making it the most affordable first-gen Apple product in any major category the company has entered) is enough to cause so much vexation.

A first observation: while fans of rival companies have always made play of the fact that Apple products are expensive, what they mean is that Apple products are more expensive than the alternatives. Looking rationally at the pricing of MacBooks, for instance, it's hard to describe them as a rip-off (aside from the occasional 'rip-off Britain' unfavourable trans-Atlantic conversion, and even these often look worse than they are because of different labelling of pre- and post-tax pricing). There are nearly always cheaper alternatives, but our experience suggests you get what you pay for. The price is not low, but it is fair.



What's new about the Apple Watch, new for Apple and new for the technology industry in general, is the idea of a product costing more – vastly more, in fact – without doing more things better. The Edition doesn't have a faster processor or a better battery; you don't get more apps or a bigger screen. It's just made of more expensive materials, and that doesn't make a lot of sense in the tech world, where we expect a correlation between what we pay for a device and what it can do and how well. The Apple Watch Edition costs more because the people that buy it are willing to spend more money on it (beyond the broader but more limited capitalist sense in which this is true of all products), and in this industry we find that confusing.

In the fashion industry, though? Not confusing. Wholly understandable. Fashion is – if experts in that field will forgive a few cautious observations from a man who mostly looks like he has been dressed by his mum in the dark and on a budget – an arena that has completely divorced value from function. I haven't tried them on, but I'm willing to assume

that a £1,365 pair of Christian Louboutin ankle boots is not going to be 20 times as comfortable as a £70 pair from H&M, nor is it going to last 20 times as long, or keep your feet 20 times as dry. But – just as with the Apple Watch Sport and the Apple Watch Edition – they are made out of nicer materials, they look nicer and they are aimed at a wealthier clientele, and that's what they are willing to spend. And, while conspicuous unnecessary spending is always going to seem bizarre to those who aren't invested in that particular type of product (presumably many would think I waste my money clothing and feeding a toddler), it's hard to argue that there's anything really wrong with that.

Cast your mind back a few weeks and you'll recall that a lot of us were bemused by the idea of fashion-world luminaries being invited to the Apple Watch launch: imagining, I suspect, that most of them, like the brainless supermodels in *Private Eye* or *Zoolander*, would be sitting there confused by processor speeds and downloadable applications and wireless charging; and that any references to Apple products other than the Watch would make their heads explode. But it seems that we're the ones that failed to understand what's going on.

Apple has moved on – or rather enlarged the scope of its operations. In entering the fashion sector it also adopted fashion's commercial conventions: not least the idea of a super-luxury flagship line aimed at the 0.1 percenters and a diffusion line at the bottom to offer a hint of the first group's glamour to the rest of us at a fraction of the price. From a company that set out to make personal computers affordable for all, that might seem like a betrayal. But it's just the reality of the new world that Apple has joined.



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